MPC

VERSION 1.0

ICT INDUSTRY PROFILING AND VALUE CHAIN

LIMITED CIRCULATION

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1.0 Porter's Value Chain

In a 1985 book "Competitive Advantage," Michael Porter wrote, in order to add values for customer, a series of value creation activities are required in an organization. Two important activities were defined which are the Primary Activities and the Support Activities. Both activities are interdependent and the value created during the Primary Activities will then be translated into profit margin for the organization.

Value Created and Captured – Cost of Creating that Value = Margin

As much as possible the organization will not hesitate to add value into their product or services as the more value added for customer, the more profitable the company will be and it develops the competitive advantage for the organization. Figure 1 is the Porter's value chain model.

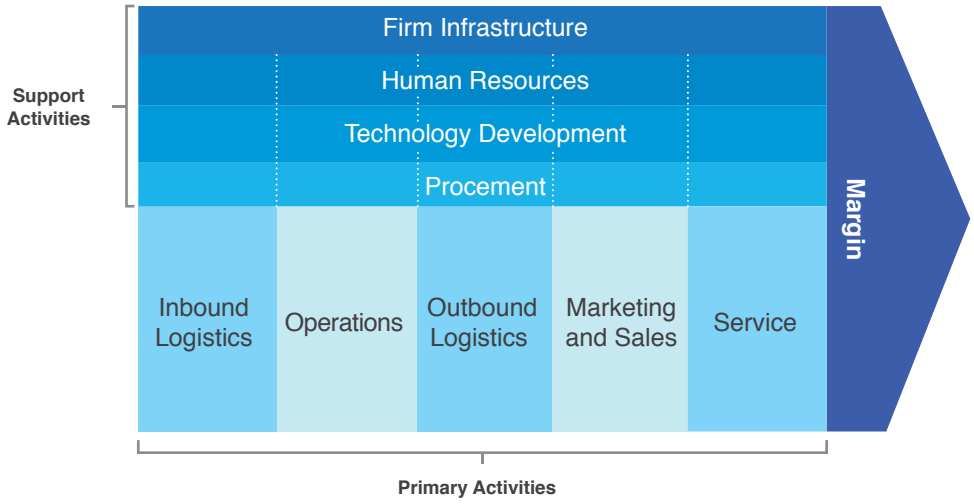

Figure 1: Porter's Value Chain

2.0 Value Chain & Ecosystem

Value chain is a set of activities an establishment undertakes that adds and creates value to its customers. It is a process that entails different activities that provide cost and differentiation advantage to an establishment. The way the activities within a value chain perform and connect will determine the costs of the product and services and eventually the profit of the establishment. Understanding how an establishment creates value is a critical element in developing a competitive strategy.

The eco-system involves linking and connecting of different touch points within an industry. Each touch point is complementary to one-another and add value to the value chain. Within the eco-system, stakeholders such as government agencies, associations as well as educational institutions are incorporated in as they form the foundation and support for the industry.

3.0 ICT Value Chain

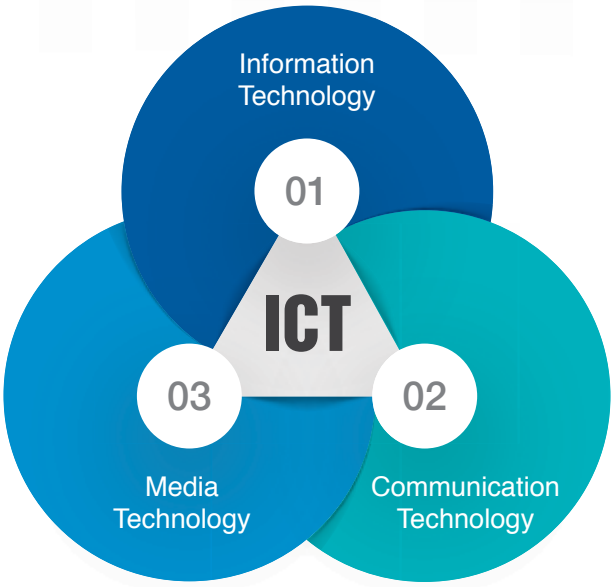

Figure 2: ICT

Although there is no universal definition of ICT, the technology behind it is actually consist of three very distinct technologies which are Information Technology, Media Technology and Telecommunication or Communication Technology. The convergence of these technologies (Figure 2) has created ICT and as a result multitude of devices and services were created. The smart phone for example, is one of the devices. Correspondingly, the ICT Value Chain is also the combination of the three technologies value chains. Each of these technologies had it its own specific value chain although some of the activities especially during the manufacturing of components; the same manufacturers are producing them.

Figure 3 represent the ICT Value chain as a whole. It encompass the stakeholders (Government Agencies, Industry Group and Education Institutions), the hardware and software manufacturer which also includes the wholesalers and distributors, the ICT sub-sectors as defined by Department of Statistics Malaysia (DOSM) together with their main activities and the final part is the end user which includes consumer, Banks, Government, Corporations and Retailers.

The stakeholders determine the direction of the whole of ICT industries in Malaysia. At the onset of all the policies, laws and codes that governing the ICT industries, manufacturers build facilities to produce ICT products that eventually will be distributed by wholesalers and appointed distributors. ICT sometimes requires experts to determine the correct hardware and software to be merged thus the Value Added Reseller will come into the picture. With or without Value Added Reseller, ICT industries make use of the technology to produce products or services that related to Telecommunications, Media and purely ICT services. These products and services are then sold to end users such as private consumers, Governments, Industries, Banks and others.

Relating this to the generic Porter's value chain, the Supporting Activities are represented by the stakeholders while the Primary Activities are actually happening within the dotted box as a whole.

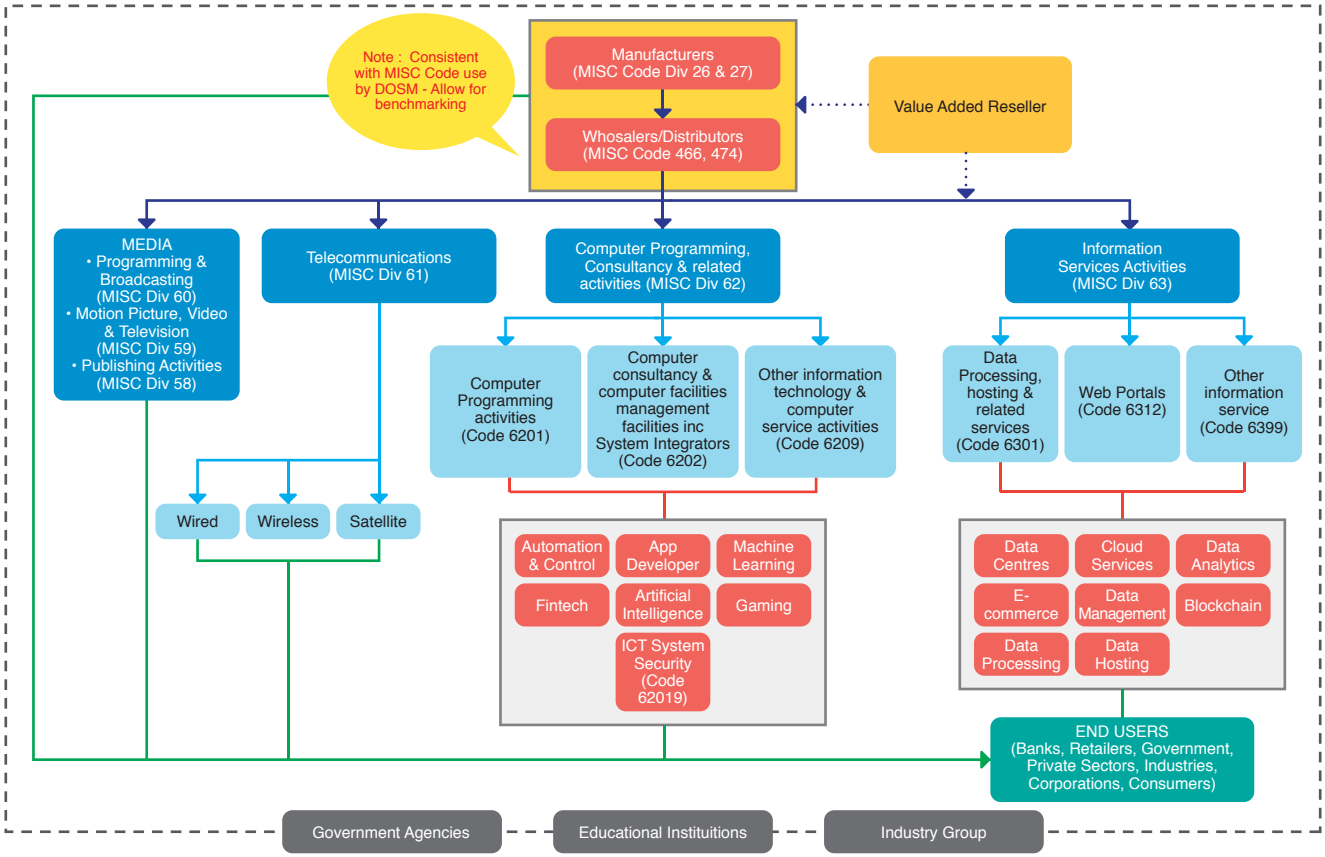

Figure 3: ICT Value Chain

The ICT value chain as a whole is fragmented but yet interconnected. It is fragmented since ICT requires specialization at different stages of its production and thus the value chain is split-up according to the country's specialization. Geographically, although fragmented, with the advent of internet technology, players in the Primary Activities area are interconnected. Each of the sub sectors and also the end users are capable to either be in touch with each other for information sharing and through some E-commerce platform, sales transaction can be done without going through the traditional sales channel. In Figure 3, the green lines represent the interconnectivity among the manufacturer group, sub-sectors and the end users.

3.1 The Stakeholders

3.1.1 Government Agencies

Framing and supporting the ICT industry in Malaysia are chartered by the Government Agencies that provide the necessary policies and infrastructure. Since 1994, with the establishment of National Information Technology Council of Malaysia (NITC), has been advising and consulting the government on matters pertaining ICT. Figure 4 shows the main ICT development by the government of Malaysia over the years.

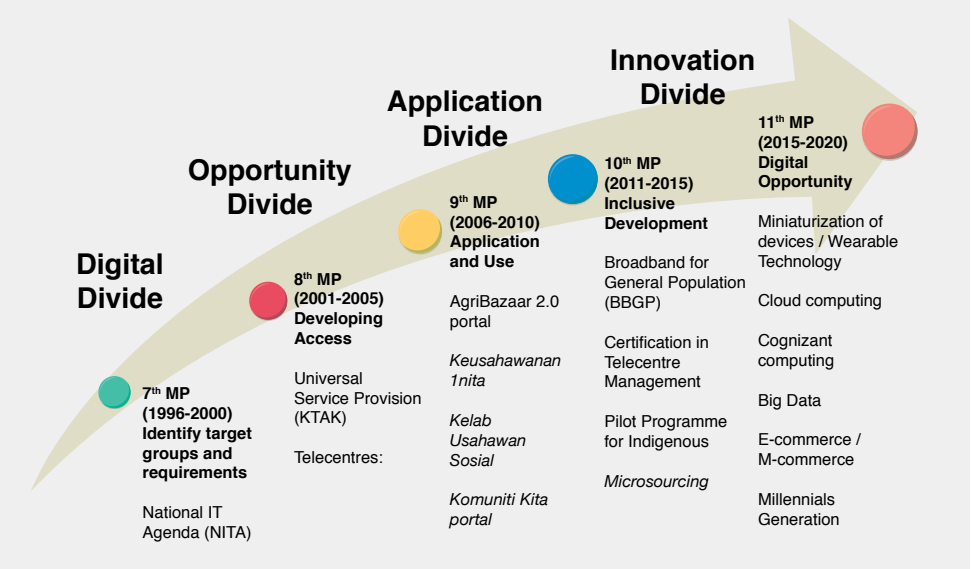

Figure 4: Main ICT development in Malaysia - Source: EPU and Pikom

The ICT industry is recognized as the main enabler for the Digital Economy and the Government of Malaysia through Kementerian Komunikasi dan Multimedia Malaysia is spearheading the Digital Economy through Malaysia Digital Economy Corporation (MDEC). Other Ministries includes Kementerian Sains dan Teknologi Malaysia through its Government Link Companies (GLC) such as MIMOS Bhd (MIMOS), SIRIM Bhd (SIRIM), Technology Park Malaysia Corporation Sdn. Bhd. (TPM) and Malaysian Technology Development Corporation (MTDC) are taking some part in promoting and encouraging the Digital Economy in Malaysia.

In the public sector, MAMPU or Malaysian Administrative Modernization and Management Planning Unit have outlined the strategic direction of ICT implementation in the Malaysian Public Sector for the year 2016 until 2020. This is in line with the Government Transformation Plan to be a developed nation by year 2020.

The Government through its related agencies (Table 1) is also proving funds to ICT establishments. These funds are for idea generation, research and development, innovation, incubation, alpha prototypes, beta prototypes, commercialization, branding and market development in science and technology, including ICT and multi-media.

Funding opportunities for R&D, Innovation and Commercialization
• Cradle Fund of Ministry of Finance (MOF) • Science Fund of MOSTI • InnoFund of MOSTI • TechnoFund of MOSTI • Malaysian Animation Creative Content Centre (MAC3) Fund of MDeC • Techology Innovation for Globalisation Fund (TIG) of MDeC • Malaysian Technology Development Corporation (MTDC) Funding: • Commercialisation of Research & Development Fund (CRDF) • Technology Acquisition Fund (TAF • The Business Growth Fund (BGF) • Business Start-up Fund (BSF • Business Expansion Fund (BEF) • Export Services Fund of Malaysian External Trade Corporation (MATRADE) • Soft Loan Scheme for Services Exports of MATRADE

Table 1: Funds available from Government Agencies

The ICT legal and regulatory environment created by the Government of Malaysia has provided the much needed protection and security of information transaction and also intellectual property rights. Table 2 shows the related Acts and Codes for ICT industries in Malaysia

Legal and regulatory
• Communications and Multimedia Act 1998 • Computer Crimes Act 1997 • Copyright Act (Amendment)1997 • Digital Signature Act 1997 • Electronic Commerce Act 2006 • Electronic Government Activities Act 2007 • Payment Systems Act 2003 • Personal Data Protection Act 2010 • Telemedicine Act 1997 • Penal Code (including Chapter on terrorism & cyber-terrorism) • Communications and Multimedia Content Code

Table 2: Legal and Regulatory for ICT industries in Malaysia

3.1.2 Education Institution

The educational institution supplies the much needed ICT workforce to the industry. Among the Universities that advocate the ICT agenda of the nation are:

Universiti Multimedia Malaysia
Universiti Sains Malaysia
Universiti Teknologi Mara
University Teknologi Malaysia
University Malaya
Taylors University
Tunku Abdul Rahman University College
Sunway University
Asia Pacific University of Technology and Innovation
Politeknik Malaysia

Together with other Government and Private Universities, to date, according to the Malaysian Qualifications Register (MQR), there are almost 600 bachelor degree and diploma as well as certificates courses related to ICT – Computer Science, Information Technology, Multimedia, Computer Engineering, IT Engineering and Telecommunication Engineering. These courses will adequately provide graduates to the fast growing digital economy industry.

The following tables are current courses available at Public (IPTA), Private (IPTS) Universities and also Polytechnics that cater for the needs of the industry in terms of manpower and talent. The mapping shows the need for certain disciplines such as Data Analytics which are not being offered by universities/polytechnics.

COURSES AVAILABLE	PUBLIC - IPTA																		
	IIUM	UPNM	UPSI	UKM	UMK	UMP	UNIMAP	UMS	UNIMAS	UMT	UPM	USIM	USM	UNISZA	UTEM	UTM	UITM	UTHM	UUM	UM
Bachelor of Applied Arts with Honours (Cinematography)									●											
Bachelor of Computer Science (Artificial Intelligence) with Honours		●		●											●					
Bachelor Of Computer Science (Bioinformatics)				●												●				
Bachelor of Computer Science (Computer Network Security) with Honours		●				●		●						●	●	●		●		
Bachelor of Computer Science (Honours)	●								●		●		●			●	●	●		
Bachelor Of Computer Science (Industrial Computing)				●												●				
Bachelor of Computer Science (Software Development) with Honours															●					
Bachelor of Computer Science (Software Engineering)			●			●		●	●	●						●		●		
Bachelor of Computer Science with Maritime Informatic										●										
Bachelor of Information Technology (Honours)	●								●							●		●		
Bachelor of Information Technology With Honours (Computer Science)					●				●								●		●	
Bachelor of Information Technology with Honours (Computer Systems Technology)									●								●			
Bachelor Of Information Technology With Honours (E-Commerce)								●												
Bachelor Of Art And Design (Hons) (Graphic Design)																	●			
Bachelor of Computer Science (Hons.) Netcentric Computing																				
Bachelor Of Science (Hons) (Business Computing)																	●			
Bachelor Of Science (Hons) (Data Communications And Networking)																	●			
Bachelor of Information Technology (Hons) Management																				

COURSES AVAILABLE	PUBLIC - IPTA																		
	IIUM	UPNM	UPSI	UKM	UMK	UMP	UNIMAP	UMS	UNIMAS	UMT	UPM	USIM	USM	UNISZA	UTEM	UTM	UITM	UTHM	UUM	UM
B.Sc (Hons) in Computer Games Development																				
Bachelor of Information Technology (Hons) Mobile Computing																				
B.Sc (Hons) in Network Computing																				
B.Sc (Hons) in Web Media Technology																				
BA (Hons) in Animation																				
BA (Hons) in Digital Film and Television																				
Bachelor In Computer Forensic																				
Bachelor of Computer Science (Graphic & Multimedia Technology) with Honours						●		●	●							●	●			
Bachelor of Computer Science (Interactive Media) With Honours															●	●				
Bachelor of Applied Arts with Honours (Design Technology)									●											
Bachelor of Creative Technology with Honours					●															
Bachelor of Fine Arts (Honours) (Graphic Communication)													●							
Bachelor of Fine Arts (Honours) (New Media Technology and Design)													●						●	
Bachelor of Information Technology With Honours (Multimedia Studies)				●					●									●	●	
Bachelor of Technology Management (Hons)																			●	
Bachelor of Photography and Creative Imaging (Hons)																	●			
B A (Hons) Graphic Design																				

Table 3: ICT Courses Availableat Public Universities (IPTA) -Source: MQA

COURSES AVAILABLE	PRIVATE - IPTS													
	AIMST University	Al Madinah International University (Mediu)	Asia E University	Asia Metropolitan University	Asia Pacific Uni	Binary University Of Management And Entrepreneurship	City University	Curtin University, Sarawak	DRB-Hicom University Of Automotive Malaysia	Help University	Heriot-Watt University	Infrastucture University Kuala Lumpur	International Medical University (IMU)	INTI International University
Bachelor of Applied Arts with Honours (Cinematography)														
Bachelor of Computer Science (Artificial Intelligence) with Honours					●									
Bachelor Of Computer Science (Bioinformatics)														
Bachelor of Computer Science (Computer Network Security) with Honours								●				●		
Bachelor of Computer Science (Honours)					●	●	●	●				●		●
Bachelor Of Computer Science (Industrial Computing)														
Bachelor of Computer Science (Software Development) with Honours														
Bachelor of Computer Science (Software Engineering)												●		●
Bachelor of Computer Science with Maritime Informatic														
Bachelor of Information Technology (Honours)		●			●					●		●		
Bachelor of Information Technology With Honours (Computer Science)							●							
Bachelor of Information Technology with Honours (Computer Systems Technology)	●	●												
Bachelor of Information Technology with Honours (E-Commerce)														
Bachelor Of Art And Design (Hons) (Graphic Design)														
Bachelor Of Science (Hons) Netcentric Computing)														
Bachelor Of Science (Hons) Business Computing)														
Bachelor Of Science (Hons) (Data Communications And Networking)			●											
Bachelor of Information Technology (Hons) Management	●	●				●								
B.Sc (Hons) in Computer Games Development					●					●				
Bachelor of Information Technology (Hons) Mobile Computing										●				●
B.Sc (Hons) in Network Computing														●
B.Sc (Hons) in Web Media Technology					●									
BA (Hons) in Animation														
BA (Hons) in Digital Film and Television														
Bachelor In Computer Forensic														

PRIVATE - IPTS																		
Lim Kok Wing University	Mahsa University	Malaysia University Of Science And Technology	Management And Science University (MSU)	Manipal University	Allianze University College Of Medical Sciences (AUCMS)	Berjaya University College	Cyberjaya University College Of Medical Sciences	First City University College	Insaniah University College	International Islamic University College Selangor	International University College Of Arts And Science	International University College Of Technology Twintech	KDU Penang University College	Kolej Universiti Poly- Tech Mara (KUPTM)	KPJ Healthcare University College	Kuala Lumpur Metropolitan University College	Lincoln University College	Southern University College	Tati University College
●																		
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COURSES AVAILABLE	PRIVATE - IPTS													
	AIMST University	Al Madinah International University (Mediu)	Asia E University	Asia Metropolitan University	Asia Pacific Uni	Binary University Of Management And Entrepreneurship	City University	Curtin University, Sarawak	DRB-Hicom University Of Automotive Malaysia	Help University	Heriot-Watt University	Infrastucture University Kuala Lumpur	International Medical University (IMU)	INTI International University
Bachelor of Computer Science (Graphic & Multimedia Technology) with Honours														●
Bachelor of Computer Science (Interactive Media) With Honours														
Bachelor of Applied Arts with Honours (Design Technology)							●							
Bachelor of Creative Technology with Honours														
Bachelor of Fine Arts (Honours) (Graphic Communication)														
Bachelor of Fine Arts (Honours) (New Media Technology and Design)														
Bachelor of Information Technology With Honours (Multimedia Studies)					●		●							
Bachelor of Technology Management (Hons)														
Bachelor of Photography and Creative Imaging (Hons)														
B A (Hons) Graphic Design														

PRIVATE - IPTS																		
Lim Kok Wing University	Mahsa University	Malaysia University Of Science And Technology	Management And Science University (MSU)	Manipal University	Allianze University College Of Medical Sciences (AUCMS)	Berjaya University College	Cyberjaya University College Of Medical Sciences	First City University College	Insaniah University College	International Islamic University College Selangor	International University College Of Arts And Science	International University College Of Technology Twintech	KDU Penang University College	Kolej Universiti Poly- Tech Mara (KUPTM)	KPJ Healthcare University College	Kuala Lumpur Metropolitan University College	Lincoln University College	Southern University College	Tati University College
									●							●			
																●			
								●											
●			●					●	●	●						●			
●																			
								●											

Table 4 : ICT Courses Available at Private Universities (IPTA) - Source: MQA

COURSES AVAILABLE	POLYTECHNICS																													
	METro Kuala Lumpur	METro Kuantan	METro Tasek Gelugor	Muadzam Shah	Mukah Sarawak	Nilai	Port Dickson	Sandakan Sabah	Seberang Prai	Sultan Abdul Halim Muadzam Shah	Sultan Azlan Shah	Sultan Haji Ahmad Shah	Sultan Idris Shah	Sultan Mizan Zainal Abidin	Sultan Salahuddin abdul Aziz Shah	Tuanku Sultanah Bahiyah	Tuanku Syed Sirajudin	Ungku Omar	Balik Pulau	Banting Selangor	Hulu Terengganu	Ibrahim Sultan	Jeli Kelantan	Kota Bharu	Kota Kinabalu	Kuala Terengganu	Kuching Sarawak	Melaka	Merlimau Melaka	Mersing Johor	METro Betong Sarawak
Certificate in Information Technology																		●	●							●				
Diploma in Information Technology			●	●	●				●				●		●		●		●			●				●	●			●	
Bachelor of Design in Visual Communication and New Media with Honours																						●								
Diploma in Video and Film Studies			●														●													
Diploma in Graphic Design				●	●																									

Table 5 : ICT Courses Available at Polytechnics - Source: MQA

3.1.3 Industrial Group

Industrial group such as Persatuan Industri Komputer dan Multimedia Malaysia (PIKOM) serves as the voice of the ICT industry in Malaysia and works to improve the business climate in the interests of all its member companies and to promote industry growth in line with national aspirations. PIKOM major initiatives are Government Affairs, Export Promotion, Human Capital Development, Research, Business and Social Networking.

Creative Content Association Malaysia (CCAM) is an industry led government funded association of the leading content creators in Malaysia formed in 2012 for the express purpose of promoting and exporting local content and creative services to overseas markets and international broadcasters. This will be done by utilizing the latest digital technology, creativity, as well as by exploiting the unique culture of Malaysia. Among the objectives of CCAM is to provide views, procedures, policy suggestions based on that which will be introduced by the Malaysian Government to assist creative content producers in increasing their efforts to export local content abroad.

Telecom Association of Malaysia (TAM), representing the telecommunication industry and served as a platform to promote synergy among the industry players. TAM also is promoting industry awareness of telecom standards to achieve world class practices and skills.

3.2 Manufacturer

This represents the hardware component manufacturers – microelectronic, casing, power supply etc, the system manufacturers – mainframes, desktops, laptops, servers and network/communication devices and finally the software manufacturers – tools, applications and contents.

Although generally products are sold via wholesalers, distributors and eventually through sales channels, ICT products are also available direct to the end users from the manufacturer as in the case of Dell and software that could directly downloaded from their server such as Microsoft.

Value added resellers and System Integrators act as intermediary that provides the knowhow matching the correct hardware with the software or application solution required by the end user. They provide services usually involving large ICT procurement for Governments and large corporations.

3.3 ICT Sub-Sectors

As defined by DOSM.

The Media sub-sectors are predominantly dominated by Government and also large corporations.

a) Programming & Broadcasting – This is basically radio and TV. Producing their own content or assembling together audio/visual components into a complete daily program and transmitting it in several ways, such as over the air, by satellite, by cable or over the internet – example ASTRO, Tegas Broadcast.

b) Motion Picture, Video & Television - Contains activities related to Recording, Production, Distribution, Projection of Motion pictures, Sound master recordings (including music), Individual radio and TV program (“non-live content”) and Music publishing (audio and printed music) – example Animasiastudio, Animonstastudio.

c) Publishing Activities - Acquisition of copyrights, making content available to public (print, electronic, etc.) and also software

And the rest of the sub-sectors are:

d) Telecommunication - Activities related to provision of telecommunications: transmission of audio, video, text or other data. Further divided into wired telecommunication activities, wireless telecommunication activities and satellite telecommunication activities – example Celcom, Maxis.

e) Computer Programming, Consultancy & related activities - Provision of IT expertise, writing, modifying, testing, supporting software, planning/designing computer systems, on-site computer systems management and operation. Application development, gaming and artificial intelligence are some of the activities – examples: ABS Software International, Datakraf Solution

f) Information Services Activities - Data processing, hosting and related activities; web portals and other information service activities. Recent development in digital economy give rise to new set of activities such as Fintech, Data Centers, E-Booking, Cloud Services, E-Commerce, Shared Services, Outsourcing and Cyber Security. Examples of companies involves in these activities are Danawa Resources, Exitra.

3.4 End Users

The end users are defined as the ultimate user that uses the hardware and software that it is intended for. It consists of retail consumers, Government, corporation and it could be used by the industry itself. ICT products are used in socio-economy development and also business. As a result, ICT products have a large base of end users.

4.0 Objective of value chain development & establishment data profiling

The objective of this report is to develop a value chain and data profiling of 100 establishments within the industry. It is a baseline report where future initiatives could be developed to assist specific establishments in improving their productivity and thereby enhancing their growth.

4.1. Methodology and Sampling

4.1.1. A list of establishments from different sources, relevant government agencies and associations directories were randomly drawn up. A sample of 250-300 were the initial sample size drawn and added more when necessary to give a final sample of minimum 100 establishments.

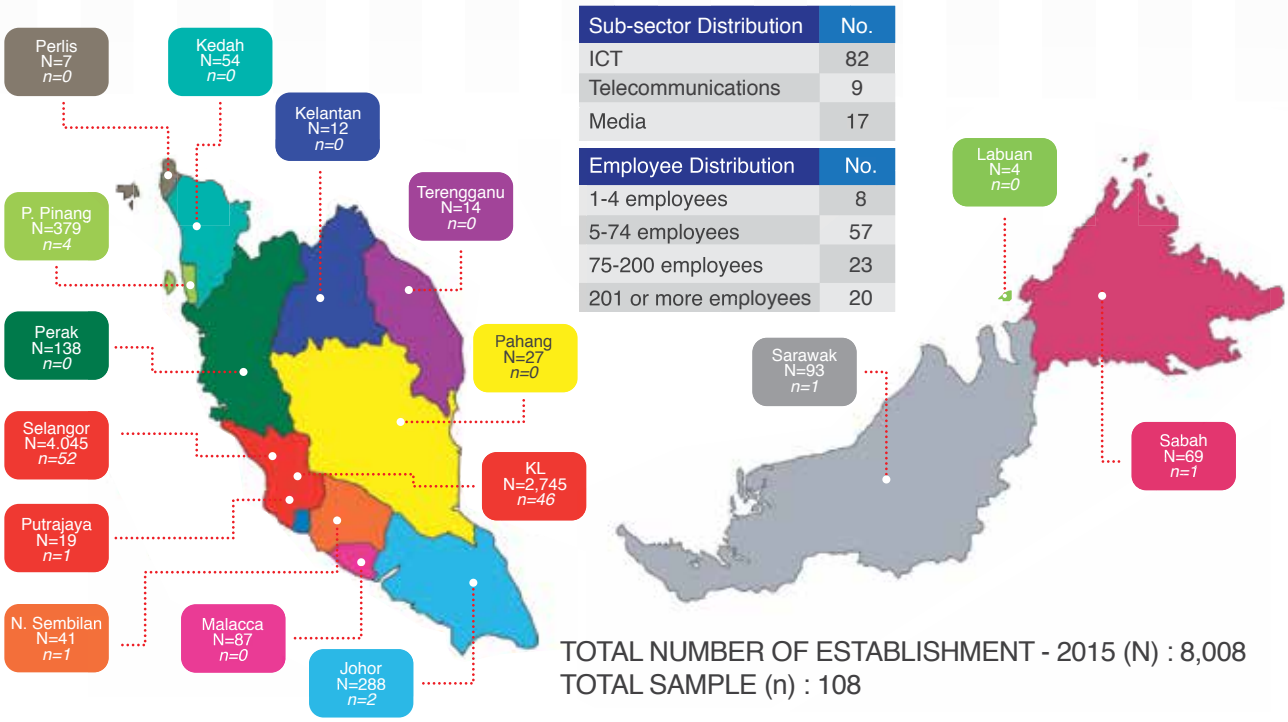
4.1.2. Information and data on geographical and activities of each establishment were collected using multi methodology namely research on websites as well as primary data collection – via telephone calls. Establishments that were dormant, uncontactable or refused to co-operate were dropped from the listing.

4.1.3. Financial data of each establishment was purchased from Suruhanjaya Syarikat Malaysia (SSM) for the productivity mapping.

4.1.4. Establishments that were excluded are :

- Establishments that has no 2016/ 2015 financial data. Financial data was based on 2016 financial data.
- Establishments that were declared as exempted companies for the financial year
- Enterprises - non Sdn Bhd - No financial data was available
- Listed companies - due to multiple subsidiaries and group financial data does not reflect true performance of individual subsidiaries
- Establishments that refused to co-operate or provide employee data (Required for productivity mapping)

Distribution & Sampling of Establishments by State ICT



Sub-sector Distribution	No.
ICT	82
Telecommunications	9
Media	17

Employee Distribution	No.
1-4 employees	8
5-74 employees	57
75-200 employees	23
201 or more employees	20

TOTAL NUMBER OF ESTABLISHMENT - 2015 (N) : 8,008
TOTAL SAMPLE (n) : 108

Figure 5 : Distribution & Sampling of Establishment by State for ICT

No. of employees	Sales Turnover	Classification
Less than 5 employees	Less than RM300,000	SME - Micro
5 – 29 employees	RM300,000 < RM3 mil	SME- Small
30 - 75 employees	RM3 mil <= RM20 mil	SME - Medium
76 or more employees	More than RM20 mil	Large

(Source: Department of Statistic / SME Corp)

Note:

- *Ranking of the establishments was based on the sample and does not reflect the entire industry.*
- *"(Company)" after establishment name denotes the financial data of the company and not the Group.*
- *"(Comprehensive)" after establishment name denotes the comprehensive financial data of the company and not the Group*
- *"(Consolidated)" after establishment name denotes the consolidated financial data of the Group*
- *"(Group)" after establishment name denotes the financial data of the Group*

5.0 GEOGRAPHICAL MAPPING

Geographical mapping indicates the spread and cluster of each touchpoint / segment within the ecosystem. The main objective of a geographical mapping is to understand the integration of each player by virtue of their physical location. It allows a check on capability and resources availability as such industry players would be able to share resources. On a macro level, policy makers are able to determine if there are any gaps between available resources and market needs.

ID	NAME OF ESTABLISHMENT	SUB-SECTOR			LOCATION				
		ICT	Telecom	Media	WP -KL	WP -Putrajaya	WP -Labuan	Selangor	Penang
1	3TP SDN BHD	●			●				
2	ABEO INTERNATIONAL SDN BHD	●			●				
3	ABS SOFTWARE INTERNATIONAL SDN BHD	●							
4	ABYRES MSC SDN BHD	●			●				
5	ACE DOT MY SDN BHD	●							●
6	ADQRATE SDN BHD	●			●				
7	ADVANCED HEALTH CARE SOLUTIONS SDN BHD	●			●				
8	ADVANTAGE SYSTEMS SDN BHD	●						●	
9	ADVANTECH CO MALAYSIA SDN BHD	●							●
10	AGD IT SOLUTION SDN BHD	●			●				
11	AGLOTEL WIRELESS SDN BHD	●						●	
12	AHEAD MOBILE SDN BHD	●						●	
13	AIRSTAR (M) SDN BHD	●						●	
14	AKTIF SETEGAP SDN BHD	●						●	
15	ALL ICT SOLUTIONS (M) SDN BHD	●						●	
16	ALTAIR ENGINEERING SDN BHD	●			●				
17	ANIMASIA STUDIO SDN BHD (Comprehensive)			●	●				
18	ANIMONSTA STUDIO SDN BHD			●				●	
19	APAC VENTURE SDN BHD	●						●	
20	APPLIED BUSINESS SYSTEM SDN BHD	●			●				
21	ASIA MEDIA SDN BHD			●				●	
22	ASPERT INNOVATIONS SDN BHD	●			●				
23	ASTRO SHAW SDN BHD			●	●				
24	BOARDROOM BUSINESS SOLUTIONS SDN BHD	●						●	
25	BRIDGENET SOLUTIONS SDN BHD	●			●				
26	BUSINESS TECHNOVISE INNOVATION SDN BHD	●						●	

LOCATION										HUMAN RESOURCE			
Johor	Perak	Perlis	Kedah	Pahang	Terengganu	Kelantan	Malacca	N. Sembilan	Sarawak	Sabah	Less than 5 employees	5-29 employees	30-75 employees	76 or more employees
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ID	NAME OF ESTABLISHMENT	SUB-SECTOR			LOCATION				
		ICT	Telecom	Media	WP -KL	WP -Putrajaya	WP -Labuan	Selangor	Penang
27	CALM@ TECHNOLOGIES @DN BHD	●			●				
28	CELCOM MOBILE SDN BHD		●		●				
29	CELE@TICA (M) @DN BHD	●							●
30	CENTURY SOFTWARE (M) SDN BHD	●						●	
31	CLOUD CONNECT @DN BHD	●						●	
32	CODE S SDN BHD	●						●	
33	COMARCH MALAY@IA @DN BHD	●						●	
34	COMSERV (SARAWAK) SDN BHD (Company)			●					
35	CONVERGE @DN BHD	●						●	
36	DANAWA RESOURCES SDN BHD	●			●				
37	DATAGRAF @OLUTION @DN BHD (e-Now Inc)	●						●	
38	DIGI TELECOMMUNICATIONS SDN BHD		●					●	
39	DREAM CHORUS @DN BHD	●			●				
40	ECS KU SDN. BHD	●						●	
41	EDARAN IT @ERVICES @DN BHD	●			●				
42	ELABRAM SYSTEMS SDN BHD	●						●	
43	E-LOCK CORPORATION @DN BHD (Company)			●	●				
44	EMI SOLUTIONS SDN BHD (Company)	●						●	
45	EXTRA @DN BHD (Company)	●			●				
46	EXTREME BROADBAND SDN BHD	●				●			
47	FERAN @OLUTION@ @DN BHD (Company)	●						●	
48	FRIENDLY WORLD SDN BHD			●					
49	GAMLITE IT (M) @DN BHD (Company)	●							
50	GCM TECHNOLOGIES SDN BHD			●	●				
51	GLOBAL@XIS @OFTWARE @DN BHD	●							●
52	HCL AXON MALAYSIA SDN BHD (Company)	●			●				

LOCATION											HUMAN RESOURCE			
Johor	Perak	Perlis	Kedah	Pahang	Terengganu	Kelantan	Malacca	N. Sembilan	Sarawak	Sabah	Less than 5 employees	5-29 employees	30-75 employees	76 or more employees
												●		
														●
														●
														●
												●		
												●		
												●		
												●		
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												●		
														●

ID	NAME OF ESTABLISHMENT	SUB-SECTOR			LOCATION				
		ICT	Telecom	Media	WP -KL	WP -Putrajaya	WP -Labuan	Selangor	Penang
53	HIMMER INDUSTRIAL SERVICES (M) SDN BHD (a-New Inc)	●			●				
54	HT CONSULTING (ASIA) SDN BHD (Company)	●						●	
55	ICT INTERACTIVE SDN BHD (Company)	●						●	
56	ICT ZONE SDN BHD	●			●				
57	IFORTE INTELLIGENCE SDN BHD	●						●	
58	I-MEDIA BROADCASTING SOLUTIONS SDN. BHD.	●			●				
59	INNOV8TIF SOLUTIONS SDN BHD (Company)	●						●	
60	INTEGRATED NETLINK SOLUTIONS SDN BHD	●			●				
61	I-TECH NETWORK SOLUTIONS SDN BHD	●			●				
62	ITWIN TECHNOLOGY SDN BHD	●							
63	IVS TECH (M) SDN BHD	●						●	
64	MANAGEPAY SERVICES SDN BHD	●						●	
65	MANAGEPAY TECHNOLOGIES SDN BHD	●						●	
66	MAXIS BROADBAND SDN BHD		●		●				
67	MEDEXONE GLOBAL SDN BHD			●				●	
68	MOBILE HEALTH SDN. BHD.	●			●				
69	MYMIT INTEGRATION SDN BHD	●			●				
70	NETICA SDN BHD	●						●	
71	NETT SYSTEMS (MSC) SDN BHD	●						●	
72	OPTIMA INFOSYSTEMS SDN BHD.	●			●				
73	OPTIMA INNOVATIONS (M) SDN BHD	●						●	
74	OPUS IT SERVICES SDN BHD	●			●				
75	ORACLE SYNERGY SDN BHD	●			●				
76	OZASIA MSC SDN BHD	●			●				
77	PARACELL (M) SDN BHD	●						●	
78	POWERWARE SYSTEMS SDN BHD	●						●	

LOCATION										HUMAN RESOURCE			
Johor	Perak	Perlis	Kedah	Pahang	Terengganu	Kelantan	Malacca	N. Sembilan	Sarawak	Sabah	Less than 5 employees	5-29 employees	30-75 employees	76 or more employees
												●		
												●		
													●	
												●		
												●		
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												●		
													●	

ID	NAME OF ESTABLISHMENT	SUB-SECTOR			LOCATION				
		ICT	Telecom	Media	WP -KL	WP -Putrajaya	WP -Labuan	Selangor	Penang
79	PRESTARIANG SYSTEMS SDN BHD	●						●	
80	PROCURRI MALAYSIA SDN BHD	●						●	
81	PRODUKSI SENI DUA PULUH DUA PULUH SDN BHD			●	●				
82	PUSH TECHNOLOGY SDN BHD	●						●	
83	Q BYTE SDN BHD	●						●	
84	QNE SOFTWARE SDN BHD	●						●	
85	QUICK SOLUTION SDN BHD	●			●				
86	RECOVISION SDN BHD	●						●	
87	REDTONE TELECOMMUNICATIONS SDN BHD		●					●	
88	RF IDENT SDN. BHD.	●						●	
89	SOLARA SYSTEMS (M) SDN BHD. (a- New Inc)			●				●	
90	SPLASH INTERACTIVE SDN BHD			●				●	
91	SURIA BUSINESS SOLUTIONS SDN BHD	●						●	
92	SUSHIVID SDN BHD (a- New Inc)			●				●	
93	TEGAS BROADCAST AND MULTIMEDIA SDN BHD			●				●	
94	TELECONTINENT SDN BHD	●			●				
95	TOP FORESIGHT SDN BHD	●			●				
96	TRIBAL WORLDWIDE SDN BHD (a-New Inc)			●				●	
97	TRONEXUS GLOBAL SDN. BHD.		●		●				
98	TUNE TALK SDN. BHD (Company)		●		●				
99	U MOBILE SDN BHD (Company)		●		●				
100	UWON TECHNOLOGY SDN BHD	●						●	
101	V.NET COMPUTER SERVICES SDN BHD	●						●	
102	VLT KUALA LUMPUR SDN BHD			●	●				
103	WEBZ DESIGN AND SOLUTIONS SDN BHD			●	●				
104	WORLDTECH SOLUTIONS SDN BHD	●						●	
105	XGEN TECHNOLOGIES SDN BHD	●			●				
106	XMT TECHNOLOGIES SDN BHD		●		●				
107	XPAY MSC SDN BHD	●			●				
108	YES (YTL COMMUNICATIONS SDN. BHD.)		●		●				

LOCATION											HUMAN RESOURCE			
Johor	Perak	Perlis	Kedah	Pahang	Terengganu	Kelantan	Malacca	N. Sembilan	Sarawak	Sabah	Less than 5 employees	5-29 employees	30-75 employees	76 or more employees
														●
													●	
											●			
												●		
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											●			
														●

6.0 Value Chain Mapping

Value chain mapping details the type of activities within the industry as performed by each sub sector. Value Chain mapping aim to project the concentration of activities. Abundance or lacking of specific activities can be inferred from the value chain mapping. It is imperative to understand the value chain mapping as it can assist in future planning of infrastructure, manpower and other resources. It can also be used as a catalyst and initial input for any future or proposed initiatives. Overcrowding & untapped market could also be visualized from the value chain map.

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
1	3TP SDN BHD						
2	ABEO INTERNATIONAL SDN BHD						
3	ABS SOFTWARE INTERNATIONAL SDN BHD						
4	ABYRES MSC SDN BHD						
5	ACE DOT MY SDN BHD						
6	ADQRATE SDN BHD						
7	ADVANCED HEALTH CARE SOLUTIONS SDN BHD						
8	ADVANTAGE SYSTEMS SDN BHD			●		●	
9	ADVANTECH CO MALAYSIA SDN BHD	●					
10	AGD IT SOLUTION SDN BHD						
11	AGLOTEL WIRELESS SDN BHD				●		●
12	AHEAD MOBILE SDN BHD					●	
13	AIRSTAR (M) SDN BHD						
14	AKTIF SETEGAP SDN BHD						
15	ALL ICT SOLUTIONS (M) SDN BHD						
16	ALTAIR ENGINEERING SDN BHD						
17	ANIMASIA STUDIO SDN BHD (Comprehensive)						
18	ANIMONSTA STUDIO SDN BHD						
19	APAC VENTURE SDN BHD						
20	APPLIED BUSINESS SYSTEM SDN BHD						

Mapping of the activities within the value chain were derived from secondary data and establishment's website. It is non-exhaustive and are dependent on the accuracy and updated information in the website. The activities were mapped to the best of our knowledge and accuracy of the activities could be further improved on the co-operation of establishments.

In addition to the value chain of the different segments/touch points, this report also present mapping of activities provided by IT service providers.

Media					Telecommunication				IT Service Provider								
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing-Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
														●			
										●	●						
									●	●				●			●
										●							
										●	●			●			
																	●
										●				●			
										●	●			●		●	
									●								
									●	●							
										●	●			●			
									●	●	●						
											●						
										●			●				
														●			
									●	●							
		●															
		●															
									●								
										●	●			●			

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
21	ASIA MEDIA SDN BHD			●			
22	ASPERT INNOVATIONS SDN BHD						
23	ASTRO SHAW SDN BHD						
24	BOARDROOM BUSINESS SOLUTIONS SDN BHD						
25	BRIDGENET SOLUTIONS SDN BHD						
26	BUSINESS TECHNOVISE INNOVATION SDN BHD						
27	CALMS TECHNOLOGIES SDN BHD						
28	CELCOM MOBILE SDN BHD						
29	CELESTICA (M) SDN BHD	●		●	●		
30	CENTURY SOFTWARE (M) SDN BHD						
31	CLOUD CONNECT SDN BHD						
32	CODE S SDN BHD						
33	COMARCH MALAYSIA SDN BHD						
34	COMSERV (SARAWAK) SDN BHD (Company)			●			
35	CONVEDGE SDN BHD						
36	DANAWA RESOURCES SDN BHD						
37	DATAKRAF SOLUTION SDN BHD (a-New Inc)						
38	DIGI TELECOMMUNICATIONS SDN BHD						
39	DREAM CHORUS SDN BHD						
40	ECS KU SDN. BHD			●		●	

Media					Telecommunication				IT Service Provider								
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing- Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
		●	●														
										●							
		●															
										●							
									●	●	●	●	●	●			
										●	●		●	●			
									●	●	●						
						●											
										●	●	●		●			
									●	●				●			
										●							
									●								
									●		●	●		●			
	●								●	●	●		●	●			
										●					●		
										●						●	
									●	●	●						
						●											
										●	●						
											●						

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
41	EDARAN IT SERVICES SDN BHD			●	●	●	
42	ELABRAM SYSTEMS SDN BHD						
43	E-LOCK CORPORATION SDN BHD (Company)			●		●	
44	EMI SOLUTIONS SDN BHD (Company)						
45	EXITRA SDN BHD (Company)						
46	EXTREME BROADBAND SDN BHD						
47	FEIRAN SOLUTIONS SDN BHD (Company)						
48	FRIENDLY WORLD SDN BHD			●	●	●	●
49	GAMLITE IT (M) SDN BHD (Company)			●	●	●	●
50	GCM TECHNOLOGIES SDN BHD			●		●	
51	GLOBALSION SOFTWARE SDN BHD			●			
52	HCL AXON MALAYSIA SDN BHD (Company)						
53	HIMMER INDUSTRIAL SERVICES (M) SDN BHD (a-New Inc)					●	
54	HT CONSULTING (ASIA) SDN BHD (Company)						
55	ICT INTERACTIVE SDN BHD (Company)						
56	ICT ZONE SDN BHD			●		●	
57	IFORTE INTELLIGENCE SDN BHD						
58	I-MEDIA BROADCASTING SOLUTIONS SDN. BHD.			●		●	
59	INNOV8TIF SOLUTIONS SDN BHD (Company)						
60	INTEGRATED NETLINK SOLUTIONS SDN BHD						

Media					Telecommunication				IT Service Provider									
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing- Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
										●	●						
										●	●						
	●									●	●						
										●	●			●			
									●	●	●		●	●		●	
										●	●		●				
									●	●	●	●	●	●			
		●															
										●	●				●		
	●								●	●	●	●	●				
										●	●			●			
									●	●	●	●	●	●			
										●							
									●	●	●	●	●	●			
									●								
										●				●			
															●		
										●		●		●			
									●	●				●			
										●	●	●	●				

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
61	I-TECH NETWORK SOLUTIONS SDN BHD			●	●		
62	ITWIN TECHNOLOGY SDN BHD			●			
63	IVS TECH (M) SDN BHD						
64	MANAGEPAY SERVICES SDN BHD						
65	MANAGEPAY TECHNOLOGIES SDN BHD						
66	MAXIS BROADBAND SDN BHD						
67	MEDEXONE GLOBAL SDN BHD			●			
68	MOBILE HEALTH SDN. BHD.						
69	MYMIT INTEGRATION SDN BHD						
70	NETICA SDN BHD						
71	NETT SYSTEMS (MSC) SDN BHD						
72	OPTIMA INFOSYSTEMS SDN BHD.						
73	OPTIMA INNOVATIONS (M) SDN BHD					●	
74	OPUS IT SERVICES SDN BHD						
75	ORACLE SYNERGY SDN BHD			●	●		
76	OZASIA MSC SDN BHD						
77	PARACELL (M) SDN BHD						
78	POWERWARE SYSTEMS SDN BHD						
79	PRESTARIANG SYSTEMS SDN BHD						
80	PROCURRI MALAYSIA SDN BHD			●		●	

Media					Telecommunication				IT Service Provider								
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing- Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
										●	●		●				
											●	●					
										●							
									●	●				●			
									●							●	
						●											
	●			●						●	●			●			
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										●	●			●			
										●		●	●				
										●		●				●	
														●			

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
81	PRODUKSI SENI DUA PULUH DUA PULUH SDN BHD						
82	PUSH TECHNOLOGY SDN BHD			●			
83	Q BYTE SDN BHD						
84	QNE SOFTWARE SDN BHD						
85	QUICK SOLUTION SDN BHD			●		●	
86	RECOVISION SDN BHD						
87	REDTONE TELECOMMUNICATIONS SDN BHD						
88	RF IDENT SDN. BHD.			●			
89	SOLARA SYSTEMS (M) SDN BHD. (a- New Inc)					●	
90	SPLASH INTERACTIVE SDN BHD						
91	SURIA BUSINESS SOLUTIONS SDN BHD			●	●	●	●
92	SUSHIVID SDN BHD (a- New Inc)						
93	TEGAS BROADCAST AND MULTIMEDIA SDN BHD						
94	TELECONTINENT SDN BHD						
95	TOP FORESIGHT SDN BHD						
96	TRIBAL WORLDWIDE SDN BHD (a-New Inc)						
97	TRONEXUS GLOBAL SDN. BHD.						
98	TUNE TALK SDN. BHD (Company)						
99	U MOBILE SDN BHD (Company)						
100	UWON TECHNOLOGY SDN BHD						

Media					Telecommunication				IT Service Provider								
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing- Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
		●															
									●	●							
									●								
									●					●			
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	●	●								●							
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						●											
						●											
									●	●				●			

ID	NAME OF ESTABLISHMENT	Manufacuring		Intermediaries (Wholesaler / Distributor/ Reseller)		Repair work / maintenance	
		Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products	Computer & computer related Products	Telecommunication Products
101	V.NET COMPUTER SERVICES SDN BHD			●			
102	VLT KUALA LUMPUR SDN BHD						
103	WEBZ DESIGN AND SOLUTIONS SDN BHD						
104	WORLDTECH SOLUTIONS SDN BHD						
105	XGEN TECHNOLOGIES SDN BHD						
106	XMT TECHNOLOGIES SDN BHD						
107	XPAY MSC SDN BHD			●			
108	YES (YTL COMMUNICATIONS SDN. BHD.)						

Media					Telecommunication				IT Service Provider								
Print	Software	TV, Radio, Music, Motion picture							Computer programming	Computer consultancy and computer facilities		Other computer programming			Data Processing, hosting and related activities		
Publishing- Books, Journal, newspaper	Publishing - Software	Production	Post -Production	Programming & broadcasting	Wired	Wireless	Satellite	MVO	Computer programming	Consultancy	System Integration	ICT System Security	Computer Disaster Recovery	Software installation	Data Processing,	Hosting	Web portal
									●	●	●	●					
	●	●		●						●							
	●			●					●	●							
										●	●	●	●	●			
										●	●					●	●
						●				●	●	●					
										●				●			
						●											

ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																						
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
1	3TP SDN BHD	●																						
2	ABEO INTERNATIONAL SDN BHD	●		●		●																		
3	ABS SOFTWARE INTERNATIONAL SDN BHD	●																						
4	ABYRES MSC SDN BHD				●																			
5	ACE DOT MY SDN BHD											●												
6	ADQRATE SDN BHD																		●					
7	ADVANCED HEALTH CARE SOLUTIONS SDN BHD																							●
8	ADVANTAGE SYSTEMS SDN BHD																							
9	ADVANTECH CO MALAYSIA SDN BHD								●													●		
10	AGD IT SOLUTION SDN BHD																							
11	AGLOTEL WIRELESS SDN BHD																							
12	AHEAD MOBILE SDN BHD										●													
13	AIRSTAR (M) SDN BHD																							
14	AKTIF SETEGAP SDN BHD						●																	
15	ALL ICT SOLUTIONS (M) SDN BHD																							
16	ALTAIR ENGINEERING SDN BHD	●																						
17	ANIMASIA STUDIO SDN BHD (Comprehensive)																							
18	ANIMONSTA STUDIO SDN BHD																							
19	APAC VENTURE SDN BHD	●									●													

TYPE OF SERVICES / ACTIVITIES																																
Intergrated Asset Management	Digital Signages	Cloud Computing (No Data Centre)	RFID	Digital Bidding Platform	Production House	Animation	Digital Media Content	Internet Service Provider	Website Designing	Sound Analysis	Infrastructure Network	Data Ctr - Colocation	Managed Svs	Data Ctr- Cloud Computing	Content Delivery Network	Carrier Mgmt	Network Service	Outsource Provider	Business Solution Provider	IT Service Provider	Land line	Mobile	wifi	Broadband	Mobile Virtual Operator	Telecommunication services	3G / 4G	Roaming Service	Mobile number protability	Prepaid	Postpaid	Fibre-Broadband
	●																															
							●		●																							
																			●	●												
								●			●																					
											●																					
												●	●				●															
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		●																														
						●																										
						●	●																									

ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																					
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
20	APPLIED BUSINESS SYSTEM SDN BHD																				●			
21	ASIA MEDIA SDN BHD																							
22	ASPERT INNOVATIONS SDN BHD			●																				
23	ASTRO SHAW SDN BHD																							
24	BOARDROOM BUSINESS SOLUTIONS SDN BHD			●																				
25	BRIDGENET SOLUTIONS SDN BHD						●														●			
26	BUSINESS TECHNOVISE INNOVATION SDN BHD			●													●			●	●			
27	CALMS TECHNOLOGIES SDN BHD												●											
28	CELCOM MOBILE SDN BHD																							
29	CELESTICA (M) SDN BHD			●																				
30	CENTURY SOFTWARE (M) SDN BHD			●																				
31	CLOUD CONNECT SDN BHD																							
32	CODE S SDN BHD	●									●													
33	COMARCH MALAYSIA SDN BHD			●						●			●			●	●							●
34	COMSERV (SARAWAK) SDN BHD (Company)	●		●						●	●	●	●		●		●				●	●		
35	CONVEDGE SDN BHD				●		●																	
36	DANAWA RESOURCES SDN BHD																							
37	DATAKRAF SOLUTION SDN BHD (a-New Inc)																							
38	DIGI TELECOMMUNICATIONS SDN BHD																							

TYPE OF SERVICES / ACTIVITIES																																				
Intergrated Asset Management	Digital Signages	Cloud Computing (No Data Centre)	RFID	Digital Bidding Platform	Production House	Animation	Digital Media Content	Internet Service Provider	Website Designing	Sound Analysis	Infrastructure Network	Data Ctr - Colocation	Managed Svs	Data Ctr- Cloud Computing	Content Delivery Network	Carrier Mgmt	Network Service	Outsource Provider	Business Solution Provider	IT Service Provider	Land line	Mobile	wifi	Broadband	Mobile Virtual Operator	Telecommunication services	3G / 4G	Roaming Service	Mobile number protability	Prepaid	Postpaid	Fibre-Broadband
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ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																						
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
39	DREAM CHORUS SDN BHD		●	●				●																
40	ECS KU SDN. BHD																							
41	EDARAN IT SERVICES SDN BHD																							
42	ELABRAM SYSTEMS SDN BHD			●																				
43	E-LOCK CORPORATION SDN BHD (Company)																							
44	EMI SOLUTIONS SDN BHD (Company)																●							
45	EXITRA SDN BHD (Company)			●				●									●			●				
46	EXTREME BROADBAND SDN BHD						●					●				●								
47	FEIRAN SOLUTIONS SDN BHD (Company)	●								●	●	●	●			●	●					●		●
48	FRIENDLY WORLD SDN BHD								●															
49	GAMLITE IT (M) SDN BHD (Company)							●															●	
50	GCM TECHNOLOGIES SDN BHD	●															●	●						
51	GLOBALSION SOFTWARE SDN BHD			●									●				●							
52	HCL AXON MALAYSIA SDN BHD (Company)												●		●						●	●		●
53	HIMMER INDUSTRIAL SERVICES (M) SDN BHD (a-New Inc)																							
54	HT CONSULTING (ASIA) SDN BHD (Company)			●		●											●							●
55	ICT INTERACTIVE SDN BHD (Company)	●										●				●	●							
56	ICT ZONE SDN BHD																							
57	IFORTE INTELLIGENCE SDN BHD			●																				

TYPE OF SERVICES / ACTIVITIES																																		
Intergrated Asset Management	Digital Signages	Cloud Computing (No Data Centre)	RFID	Digital Bidding Platform	Production House	Animation	Digital Media Content	Internet Service Provider	Website Designing	Sound Analysis	Infrastructure Network	Data Ctr - Colocation	Managed Svs	Data Ctr- Cloud Computing	Content Delivery Network	Carrier Mgmt	Network Service	Outsource Provider	Business Solution Provider	IT Service Provider	Land line	Mobile	wifi	Broadband	Mobile Virtual Operator	Telecommunication services	3G / 4G	Roaming Service	Mobile number protability	Prepaid	Postpaid	Fibre-Broadband
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ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																					
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
58	I-MEDIA BROADCASTING SOLUTIONS SDN. BHD.																							
59	INNOV8TIF SOLUTIONS SDN BHD (Company)	●		●					●		●													
60	INTEGRATED NETLINK SOLUTIONS SDN BHD	●		●			●	●									●							
61	I-TECH NETWORK SOLUTIONS SDN BHD			●			●																	
62	ITWIN TECHNOLOGY SDN BHD																							
63	IVS TECH (M) SDN BHD																							
64	MANAGEPAY SERVICES SDN BHD	●							●				●											
65	MANAGEPAY TECHNOLOGIES SDN BHD								●				●											
66	MAXIS BROADBAND SDN BHD																							
67	MEDEXONE GLOBAL SDN BHD																●							●
68	MOBILE HEALTH SDN. BHD.	●															●							●
69	MYMIT INTEGRATION SDN BHD	●									●										●			
70	NETICA SDN BHD							●																
71	NETT SYSTEMS (MSC) SDN BHD	●		●																				
72	OPTIMA INFOSYSTEMS SDN BHD			●									●	●			●							
73	OPTIMA INNOVATIONS (M) SDN BHD							●	●		●													
74	OPUS IT SERVICES SDN BHD			●		●																		
75	ORACLE SYNERGY SDN BHD			●		●	●	●	●		●	●		●	●	●						●		●
76	OZASIA MSC SDN BHD	●																						

TYPE OF SERVICES / ACTIVITIES																																		
Intergrated Asset Management	Digital Signages	Cloud Computing (No Data Centre)	RFID	Digital Bidding Platform	Production House	Animation	Digital Media Content	Internet Service Provider	Website Designing	Sound Analysis	Infrastructure Network	Data Ctr - Colocation	Managed Svs	Data Ctr- Cloud Computing	Content Delivery Network	Carrier Mgmt	Network Service	Outsource Provider	Business Solution Provider	IT Service Provider	Land line	Mobile	wifi	Broadband	Mobile Virtual Operator	Telecommunication services	3G / 4G	Roaming Service	Mobile number protability	Prepaid	Postpaid	Fibre-Broadband
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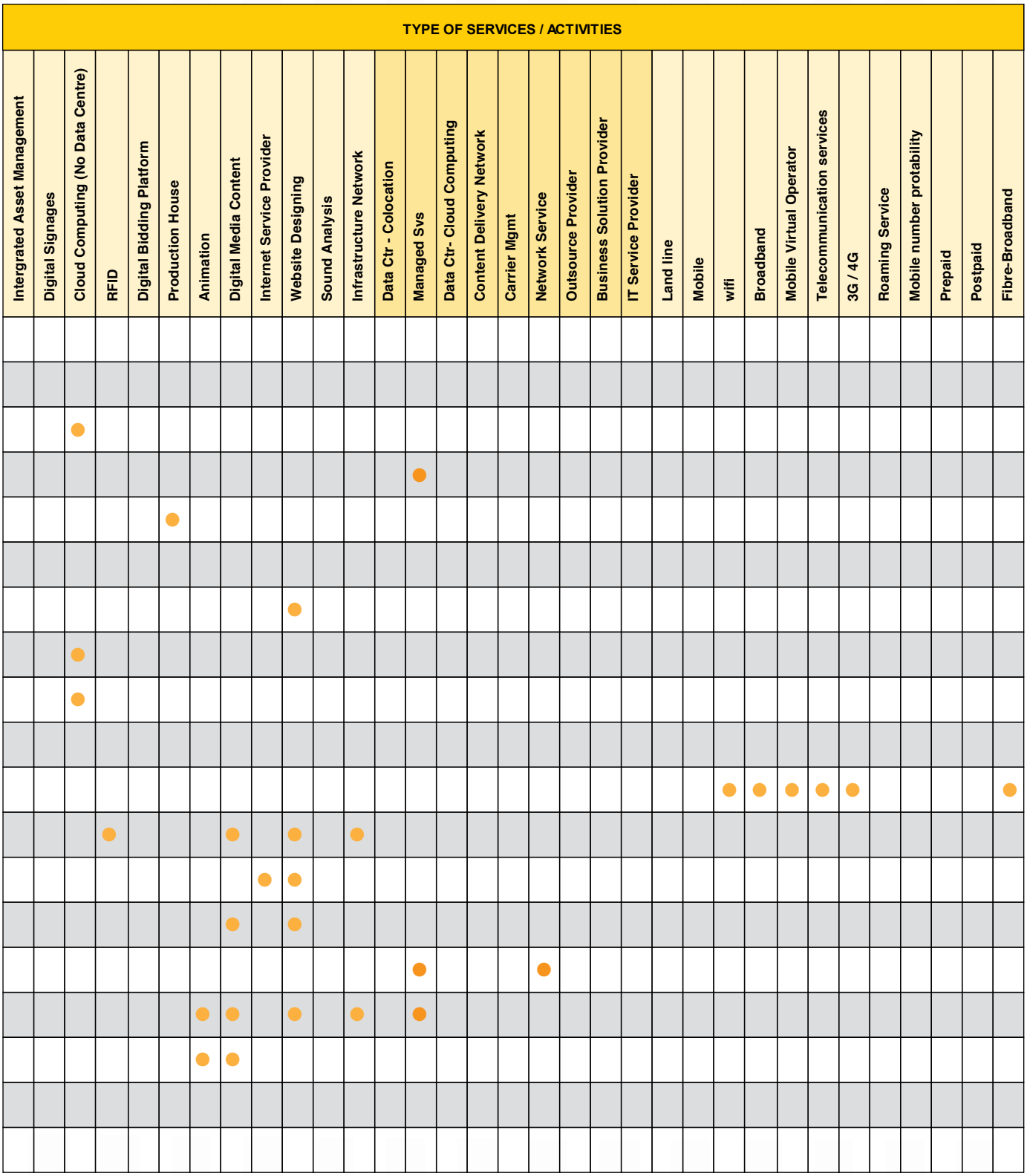
ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																					
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
77	PARACELL (M) SDN BHD				●			●																
78	POWERWARE SYSTEMS SDN BHD						●																	
79	PRESTARIANG SYSTEMS SDN BHD							●	●															
80	PROCURRI MALAYSIA SDN BHD																							
81	PRODUKSI SENI DUA PULUH DUA PULUH SDN BHD																							
82	PUSH TECHNOLOGY SDN BHD	●		●													●							
83	Q BYTE SDN BHD	●									●						●							
84	QNE SOFTWARE SDN BHD	●									●						●							
85	QUICK SOLUTION SDN BHD	●									●		●				●							
86	RECOVISION SDN BHD			●													●							
87	REDTONE TELECOMMUNICATIONS SDN BHD																							
88	RF IDENT SDN. BHD.																							
89	SOLARA SYSTEMS (M) SDN BHD (a- New Inc)																							
90	SPLASH INTERACTIVE SDN BHD	●							●		●								●					
91	SURIA BUSINESS SOLUTIONS SDN BHD																							
92	SUSHIVID SDN BHD (a- New Inc)																		●					
93	TEGAS BROADCAST AND MULTIMEDIA SDN BHD																							
94	TELECONTINENT SDN BHD			●		●																		
95	TOP FORESIGHT SDN BHD																●			●				


TYPE OF SERVICES / ACTIVITIES
Intergrated Asset Management
Digital Signages
Cloud Computing (No Data Centre)
RFID
Digital Bidding Platform
Production House
Animation
Digital Media Content
Internet Service Provider
Website Designing
Sound Analysis
Infrastructure Network
Data Ctr - Colocation
Managed Svs
Data Ctr- Cloud Computing
Content Delivery Network
Carrier Mgmt
Network Service
Outsource Provider
Business Solution Provider
IT Service Provider
Land line
Mobile
wifi
Broadband
Mobile Virtual Operator
Telecommunication services
3G / 4G
Roaming Service
Mobile number protability
Prepaid
Postpaid
Fibre-Broadband

ID	NAME OF ESTABLISHMENT	TYPE OF SERVICES / ACTIVITIES																					
		App Developer	Artificial Intellience	Business Process Outsourcing	Big Data Analytics	Contact Centre	Data Centre	Data Analytics	E-Commerce	Product Review Website	Mobile Application	Education Computer Technology	Card Management System	Social Netwoeking	Product Testing	E-learning System	R and D Development	Green IT Infrastructure	Advertizing Platform	Back End Business Solutions	Cybersecurity Monitoring Services	Open ERM and CRM	Outdoor Advertisment	Healthcare Solution
96	TRIBAL WORLDWIDE SDN BHD (a-New Inc)																		●				●	
97	TRONEXUS GLOBAL SDN. BHD.																							
98	TUNE TALK SDN. BHD (Company)																							
99	U MOBILE SDN BHD (Company)																							
100	UWON TECHNOLOGY SDN BHD	●							●										●					
101	V.NET COMPUTER SERVICES SDN BHD							●																
102	VLT KUALA LUMPUR SDN BHD																●		●					
103	WEBZ DESIGN AND SOLUTIONS SDN BHD																●		●					
104	WORLDTECH SOLUTIONS SDN BHD	●															●							
105	XGEN TECHNOLOGIES SDN BHD									●														
106	XMT TECHNOLOGIES SDN BHD	●				●					●									●				
107	XPAY MSC SDN BHD								●															
108	YES (YTL COMMUNICATIONS SDN. BHD.)																							

TYPE OF SERVICES / ACTIVITIES																																
Intergrated Asset Management	Digital Signages	Cloud Computing (No Data Centre)	RFID	Digital Bidding Platform	Production House	Animation	Digital Media Content	Internet Service Provider	Website Designing	Sound Analysis	Infrastructure Network	Data Ctr - Colocation	Managed Svs	Data Ctr- Cloud Computing	Content Delivery Network	Carrier Mgmt	Network Service	Outsource Provider	Business Solution Provider	IT Service Provider	Land line	Mobile	wifi	Broadband	Mobile Virtual Operator	Telecommunication services	3G / 4G	Roaming Service	Mobile number protability	Prepaid	Postpaid	Fibre-Broadband
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7.0 Productivity Mapping

The Productivity Mapping reflects the establishments' productivity in terms of human resource, financial and capital. Five indicators are presented in this report to determine the individual establishments' productivity. The indicators are: Labour Competitiveness, Labour Productivity, Capital Productivity, Capital Intensity and Profitability. The indicators provide stakeholders with better understanding of each establishment's productivity and the pain points that are impeding the Strategic Thrust as outlined in the Malaysia Productivity Blueprint (MPB).

The approach in deriving the various Productivity Indicators is best explained individually, as follows:

Labour Competitiveness

Competitiveness in terms of labour cost indicates the comparability of the industry in producing products or services at the lowest possible labour cost.

RATIO	UNIT	WHAT IS TEELS
Labour Cost Per Employee (LCE) = Labour Cost / No. of Employees	Ringgit Malaysia (RM)	Measure the average remuneration per employee. A high ratio means high returns to the individual workers and vice versa
Unit Labour Cost (ULC) = Labour Cost / Total Output	Pure Number	Indicates the proportion of labour cost to total output. A high ratio indicates high labour costs. This could be due to a labour shortage and lack of skilled labour, or indicative of a poor labour mix. It could also be due to high labour turnover.

Labour Productivity

Labour productivity is one way of gauging the productivity performance of an industry.

RATIO	UNIT	WHAT IS TEELS
Total Output Per Employee = Total Output (Revenue) / No. of Employees	Ringgit Malaysia (RM)	The size of output generated by each employee of the enterprise.
Capital Turnover = Total Outputs (Revenue) / Fixed Assets	Pure Number	This ratio measures the efficiency in capital utilization and/ or marketing system. A high ratio indicates efficiency in capital utilization and good marketing system. A low ratio means low turnover of materials, high work-in progress and fixed assets.

Capital Intensity

Capital intensity measures the amount of fixed assets allocated to each employee. It is also known as Fixed Assets per Employee or simply capital-to-labour ratio. This ratio measures whether an industry is relatively capital-intensive or labour-intensive.

RATIO	UNIT	WHAT IS TEELS
Fixed Assets Per Employee = Fixed Assets/ No. of employees	Ringgit Malaysia (RM)	Indicates whether an enterprise adopts a capital intensive or labour-intensive policy. A high ratio indicates high capital intensity. A low ratio indicates that the enterprise is dependent on labour-intensive methods or that there is low technological input.

Definition of Variables

Revenue	Revenue was based on the 2016 / 2015 financial data purchased from SSM
Employed Persons (Average for the period)	All categories of employees, including working directors/proprietors/ partners, unpaid family workers and part-time workers
Labour Cost	Wages and salaries (including commissions, bonuses and benefits), remuneration paid to working directors/proprietors/partners, and EPF/ SOCSO paid by employers.
Fixed Assets (Average for the period)	All physical assets namely transport equipment, computers, machinery and equipment, and furniture and fittings. (Exclude Land & building) at is at cost

NOTES:

- *Revenue ranking of the establishments was based on the sample and does not reflect the entire industry ranking (universe)*
- *"n/a" Data unavailable*

RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
1	MAXIS BROADBAND SDN BHD	7,924,242,000.00	34.29	221.86
2	DIGI TELECOMMUNICATIONS SDN BHD	6,597,102,000.00	-4.58	-2.99
3	CELCOM MOBILE SDN BHD	5,654,122,000.00	-16.14	-64.69
4	U MOBILE SDN BHD (Company)	1,836,426,000.00	28.68	11.93
5	CELESTICA (M) SDN BHD	1,191,134,384.00	1.97	-3.77
6	YES (YTL COMMUNICATIONS SDN. BHD.)	644,019,226.00	-0.02	5.74
7	TUNE TALK SDN. BHD (Company)	327,130,555.00	-4.97	-4.50
8	PRESTARIANG SYSTEMS SDN BHD	125,206,260.00	10.93	-7.31
9	AIRSTAR (M) SDN BHD	94,022,846.00	9.65	5.35
10	APPLIED BUSINESS SYSTEM SDN BHD	92,555,837.00	20.65	-55.87
11	HCL AXON MALAYSIA SDN BHD (Company)	89,391,140.00	-28.26	-23.10
12	BRIDGENET SOLUTIONS SDN BHD	51,604,290.00	54.94	6.60
13	ELABRAM SYSTEMS SDN BHD	48,611,000.00	56.49	153.76
14	REDTONE TELECOMMUNICATIONS SDN BHD	45,633,000.00	-19.90	-27.47
15	CENTURY SOFTWARE (M) SDN BHD	40,727,125.00	-4.18	32.61
16	GAMLITE IT (M) SDN BHD (Company)	40,068,328.00	538.20	6.94
17	DANAWA RESOURCES SDN BHD	30,223,146.00	-66.36	-8.32
18	EDARAN IT SERVICES SDN BHD	29,546,746.00	-17.97	30.36
19	ADVANTECH CO MALAYSIA SDN BHD	28,331,052.00	47.61	22.42

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
135,952.10	0.05	2,730,614.06	0.69	3,955,045.49
194,805.38	0.04	5,074,693.85	1.15	4,408,430.00
7,896.00	0.01	1,413,530.50	87.23	16,204.25
189,448.57	0.07	2,623,465.71	1.11	2,352,958.57
54,670.76	0.07	794,089.59	7.48	106,178.41
65,814.34	0.10	644,019.23	0.28	2,315,934.70
693,931.74	0.05	14,223,067.61	21.27	668,744.83
52,029.53	0.06	834,708.40	14.55	57,385.19
46,175.64	0.04	1,175,285.58	15.73	74,708.69
123,260.52	0.03	4,407,420.81	268.96	16,387.10
87,493.80	0.59	148,985.23	3.61	41,308.75
11,384.34	0.02	645,053.63	23.42	27,538.54
310,766.67	0.19	1,620,366.67	26.98	60,066.67
21,536.84	0.18	120,086.84	1.14	104,965.79
33,684.65	0.24	138,058.05	31.05	4,446.81
27,584.80	0.02	1,335,610.93	3.43	389,559.90
98,316.36	0.12	839,531.83	0.84	999,755.19
61,338.09	0.17	369,334.33	2.75	134,399.04
95,322.55	0.07	1,416,552.60	37.52	37,750.15

RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
20	21EXTREME BROADBAND SDN BHD	24,662,450.00	3.75	4.25
21	ASTRO SHAW SDN BHD	24,490,109.00	108.03	-23.89
22	POWERWARE SYSTEMS SDN BHD	24,028,315.00	-27.67	-16.05
23	ICT ZONE SDN BHD	22,950,182.00	-5.60	-24.65
24	IFORTE INTELLIGENCE SDN BHD	20,632,499.00	66.13	68.15
25	PARACELL (M) SDN BHD	18,902,239.00	41.57	22.90
26	ECS KU SDN. BHD	17,942,000.00	25.18	-7.62
27	DREAM CHORUS SDN BHD	16,940,009.00	-21.64	-29.99
28	PROCURRI MALAYSIA SDN BHD	14,916,306.00	31.40	-13.23
29	ALTAIR ENGINEERING SDN BHD	14,248,490.00	-28.74	-15.87
30	TEGAS BROADCAST AND MULTIMEDIA SDN BHD	14,117,906.00	28.35	-11.04
31	TELECONTINENT SDN BHD	13,907,735.00	60.53	69.78
32	ITWIN TECHNOLOGY SDN BHD	12,446,936.00	14.82	10.30
33	ANIMONSTA STUDIO SDN BHD	12,351,282.00	71.02	40.40
34	CONVEDGE SDN BHD	12,177,065.00	54.90	-50.28
35	GCM TECHNOLOGIES SDN BHD	10,878,283.00	20.39	17.73
36	E-LOCK CORPORATION SDN BHD (Company)	10,868,110.00	13.73	32.31
37	XMT TECHNOLOGIES SDN BHD	10,609,567.00	-28.47	29.01

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
75,290.00	0.15	513,801.04	1.45	353,400.52
65,464.92	0.07	979,604.36	13.39	73,175.52
89,773.47	0.22	407,259.58	8.63	47,196.95
119,705.63	0.04	2,868,772.75	6.85	418,825.63
1,979,209.40	0.96	2,063,249.90	90.60	22,773.60
71,191.75	0.03	2,362,779.88	90.35	26,150.25
11,280.00	0.19	59,806.67	110.75	540.00
86,510.22	0.12	736,522.13	0.61	1,215,406.30
96,919.00	0.19	497,210.20	2.14	232,818.77
193,116.55	0.27	712,424.50	179.96	3,958.85
52,841.60	0.04	1,411,790.60	16.20	87,140.50
49,231.35	0.85	58,191.36	6.75	8,622.87
68,056.25	0.11	622,346.80	32.04	19,423.75
72,909.85	0.32	224,568.76	3.79	59,212.00
18,591.40	0.01	2,435,413.00	44.46	54,780.80
93,698.80	0.09	1,087,828.30	273.30	3,980.30
86,173.78	0.36	236,263.26	5.21	45,325.85
71,977.05	0.28	252,608.74	2.61	96,906.93

RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
38	INTEGRATED NETLINK SOLUTIONS SDN BHD	9,996,600.00	157.18	10.76
39	OPTIMA INFOSYSTEMS SDN BHD.	9,633,011.00	-0.96	-11.12
40	ASIA MEDIA SDN BHD	9,504,946.00	-13.00	-2.04
41	ORACLE SYNERGY SDN BHD	9,440,170.00	7.61	8.50
42	SURIA BUSINESS SOLUTIONS SDN BHD	9,056,014.00	-8.70	-3.93
43	PUSH TECHNOLOGY SDN BHD	7,588,151.00	8.65	-52.04
44	I-TECH NETWORK SOLUTIONS SDN BHD	6,642,008.00	-7.50	-30.17
45	EXITRA SDN BHD (Company)	6,315,426.00	3.89	6.72
46	BOARDROOM BUSINESS SOLUTIONS SDN BHD	6,212,366.00	14.48	14.61
47	MOBILE HEALTH SDN. BHD.	6,000,275.00	-63.42	4.78
48	ADVANCED HEALTH CARE SOLUTIONS SDN BHD	5,773,368.00	18.43	25.53
49	ADVANTAGE SYSTEMS SDN BHD	5,623,528.00	87.66	-3.97
50	IVS TECH (M) SDN BHD	5,262,087.00	265.98	141.42
51	HT CONSULTING (ASIA) SDN BHD (Company)	4,914,014.02	17.34	-96.51
52	MANAGEPAY SERVICES SDN BHD	4,892,224.00	-36.58	31.39
53	I-MEDIA BROADCASTING SOLUTIONS SDN. BHD.	4,771,730.00	2361.25	-4.45
54	VLT KUALA LUMPUR SDN BHD	4,757,772.00	-41.33	-27.68
55	ABEO INTERNATIONAL SDN BHD	4,719,554.00	-21.48	100.41
56	ANIMASIA STUDIO SDN BHD (Comprehensive)	4,397,355.00	-23.51	46.87

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
114,220.70	0.11	999,660.00	13.42	74,475.20
183,950.75	0.46	401,375.46	12.81	31,335.92
21,474.78	0.11	190,098.92	0.06	3,375,661.90
30,860.78	0.24	131,113.47	9.04	14,495.97
43,496.34	0.24	181,120.28	4.71	38,456.88
75,420.00	0.13	583,703.92	15.40	37,901.62
63,061.48	0.24	265,680.32	0.69	385,838.16
82,075.55	0.52	157,885.65	0.71	222,390.63
147,191.90	0.71	207,078.87	7.27	28,495.33
62,092.50	0.04	1,500,068.75	275.28	5,449.25
157,847.00	0.46	339,609.88	0.17	2,042,308.12
107,787.13	0.29	374,901.87	2.08	180,311.60
47,749.70	0.18	263,104.35	7.54	34,912.50
507.64	0.00	245,700.70	1.99	123,484.09
10,830.43	0.33	32,614.83	0.22	150,005.88
26,916.00	0.04	681,675.71	10.29	66,237.71
169,988.45	0.71	237,888.60	10.76	22,116.75
140,191.60	0.30	471,955.40	87.40	5,400.00
5,500.00	0.13	43,973.55	2.93	15,009.18

RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
57	EMI SOLUTIONS SDN BHD (Company)	4,369,715.00	12.35	6.87
58	ACE DOT MY SDN BHD	4,280,217.00	71.62	262.53
59	CALMS TECHNOLOGIES SDN BHD	3,816,392.00	36.51	52.28
60	GLOBALSION SOFTWARE SDN BHD	3,606,371.00	-1.73	17.16
61	APAC VENTURE SDN BHD	3,560,973.00	-6.13	-5.48
62	CLOUD CONNECT SDN BHD	3,435,954.00	61.02	73.80
63	FEIRAN SOLUTIONS SDN BHD (Company)	3,383,811.00	-21.12	-12.05
64	AHEAD MOBILE SDN BHD	3,249,521.00	-26.14	5.74
65	OPTIMA INNOVATIONS (M) SDN BHD	3,186,635.00	3.01	9.90
66	WORLDTECH SOLUTIONS SDN BHD	3,001,631.00	47.71	-19.25
67	COMSERV (SARAWAK) SDN BHD (Company)	2,898,608.00	44.67	5.14
68	SPLASH INTERACTIVE SDN BHD	2,870,754.00	8.38	5.84
69	ASPERT INNOVATIONS SDN BHD	2,688,545.00	12.67	19.29
70	QNE SOFTWARE SDN BHD	2,616,429.27	-67.95	-20.56
71	SOLARA SYSTEMS (M) SDN BHD. (a- New Inc)	2,282,940.37	n.a	n.a
72	ABYRES MSC SDN BHD	2,230,014.00	-2.62	-2.93
73	RECOVISION SDN BHD	2,009,733.00	10.96	-84.85
74	ADQRATE SDN BHD	1,966,398.00	-49.51	26.74
75	TRIBAL WORLDWIDE SDN BHD (a-New Inc)	1,938,896.00	-59.44	-65.29

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
67,849.93	0.47	145,657.17	4.37	33,302.30
34,695.57	0.17	203,819.86	8.13	25,071.29
62,906.26	0.45	141,347.85	5.33	26,530.33
142,911.29	0.28	515,195.86	7.73	66,689.29
168,023.80	0.47	356,097.30	2.94	120,972.20
36,627.60	0.21	171,797.70	5.18	33,176.90
99,447.05	0.65	153,809.59	3.63	42,359.59
26,370.14	0.81	32,495.21	1.63	19,912.34
57,300.43	0.54	106,221.17	3.07	34,605.23
54,557.61	0.42	130,505.70	2.38	54,829.00
9,776.40	0.07	144,930.40	1.49	97,260.50
42,359.00	0.44	95,691.80	15.63	6,121.30
84,278.13	0.50	168,034.06	8.64	19,448.38
41,716.34	0.53	79,285.74	2.44	32,519.21
7,579.38	0.11	71,341.89	19.14	3,727.32
21,488.92	0.48	44,600.28	10.35	4,309.52
55.85	0.01	6,699.11	36.75	182.27
85,486.10	0.43	196,639.80	18.12	10,854.60
85,570.70	0.44	193,889.60	7.75	25,015.40

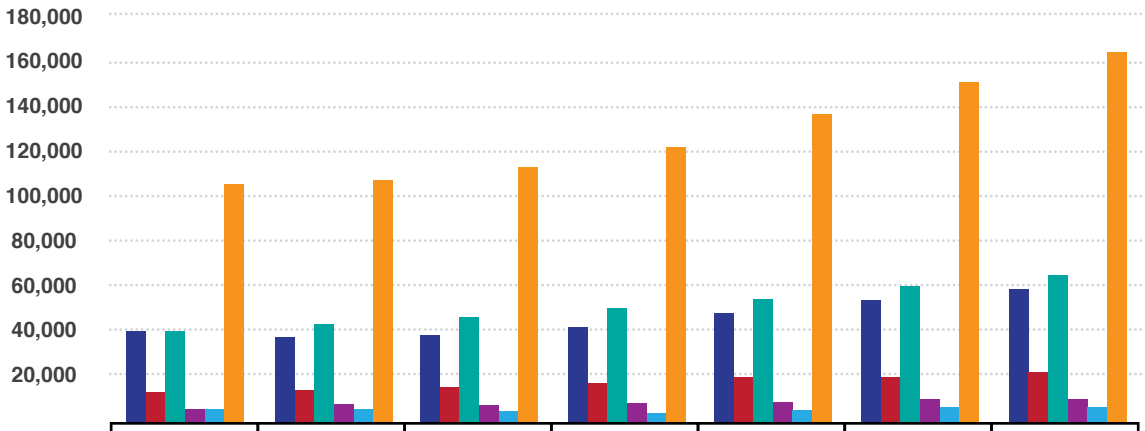
RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
76	ABS SOFTWARE INTERNATIONAL SDN BHD	1,680,829.00	1.88	25.78
77	V.NET COMPUTER SERVICES SDN BHD	1,649,280.00	26.17	108.15
78	BUSINESS TECHNOVISE INNOVATION SDN BHD	1,547,608.00	0.21	12.28
79	INNOV8TIF SOLUTIONS SDN BHD (Company)	1,516,203.00	43.86	-12.57
80	OPUS IT SERVICES SDN BHD	1,458,437.00	150.94	98.74
81	RF IDENT SDN. BHD.	1,393,906.00	-17.06	1.21
82	AKTIF SETEGAP SDN BHD	1,364,890.00	13.16	28.11
83	OZASIA MSC SDN BHD	1,224,725.00	-10.86	-11.14
84	Q BYTE SDN BHD	1,176,797.00	-28.88	-36.94
85	XPAY MSC SDN BHD	1,102,005.00	27.14	86.89
86	AGLOTEL WIRELESS SDN BHD	1,080,924.00	-64.91	-18.14
87	MEDEXONE GLOBAL SDN BHD	942,113.00	-14.35	5.92
88	COMARCH MALAYSIA SDN BHD	931,442.00	13254.01	469.99
89	DATAKRAF SOLUTION SDN BHD (a-New Inc)	807,413.00	n.a	n.a
90	FRIENDLY WORLD SDN BHD	740,479.00	-29.34	19.50
91	NETICA SDN BHD	700,000.00	-16.67	1.33
92	TOP FORESIGHT SDN BHD	694,755.00	-32.30	18.76
93	MYMIT INTEGRATION SDN BHD	687,658.00	22.13	-0.46
94	MANAGEPAY TECHNOLOGIES SDN BHD	656,337.00	-28.94	-37.91

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
47,858.94	0.48	98,872.29	6.01	16,439.29
52,896.40	0.16	329,856.00	6.25	52,789.60
20,480.00	0.09	221,086.86	7.04	31,382.14
29,722.73	0.78	37,905.08	13.41	2,827.03
33,763.79	0.65	52,087.04	2.72	19,175.57
42,945.75	0.12	348,476.50	5.84	59,717.25
39,308.60	0.14	272,978.00	1.02	268,157.80
80,125.63	0.52	153,090.63	15.73	9,733.88
69,260.50	0.24	294,199.25	7.44	39,554.00
157,491.00	0.14	1,102,005.00	290.08	3,799.00
47,788.50	0.35	135,115.50	1.39	97,065.25
82,199.87	1.31	62,807.53	15.06	4,170.87
281,071.20	1.51	186,288.40	15.37	12,119.00
25,935.73	0.48	53,827.53	61.22	879.27
37,262.00	0.20	185,119.75	10.46	17,704.75
217,156.50	1.24	175,000.00	12.03	14,542.75
62,488.38	0.72	86,844.38	1.49	58,303.50
33,131.13	0.39	85,957.25	290.76	295.63
1,372.20	0.31	4,375.58	0.16	27,708.19

RANK	NAME OF ESTABLISHMENT	REVENUE (RM) 2016	Revenue Growth (%)	Labour Cost % change
95	WEBZ DESIGN AND SOLUTIONS SDN BHD	646,019.00	6.13	4.75
96	ICT INTERACTIVE SDN BHD (Company)	633,057.00	-49.30	-5.85
97	QUICK SOLUTION SDN BHD	629,624.00	-14.99	-3.33
98	TRONEXUS GLOBAL SDN. BHD.	628,347.00	n.a	n.a
99	CODE S SDN BHD	603,062.00	-19.27	-9.09
100	XGEN TECHNOLOGIES SDN BHD	471,300.00	17.34	6.98
101	AGD IT SOLUTION SDN BHD	387,426.00	-14.45	-27.61
102	NETT SYSTEMS (MSC) SDN BHD	335,752.00	208.66	16.67
103	SUSHIVID SDN BHD (a- New Inc)	282,934.00	n.a	n.a
104	UWON TECHNOLOGY SDN BHD	260,700.00	155.34	0.00
105	3TP SDN BHD	140,093.00	-26.88	0.00
106	ALL ICT SOLUTIONS (M) SDN BHD	60,496.00	-75.73	-92.17
107	PRODUKSI SENI DUA PULUH DUA PULUH SDN BHD	44,466.00	38.24	3.89
108	HIMMER INDUSTRIAL SERVICES (M) SDN BHD (a-New Inc)	31,028.00	n.a	n.a

Labour Competitiveness		Labour Productivity	Capital Productivity	Capital Intensity
Labor Cost per Employee (LCE)= *(Labour Cost / No of Employee)* (RM)	**Unit Labour Cost (ULC)=*Labour Cost / Total Output (Revenue)***	**Total Output (Revenue) Per Employee =*Total output (Revenue) /No.of Employees* (RM)**	**Capital Turnover =*Total Output (Revenue) / Fixed Assets***	**Fixed Assets Per Employee =*Fixed Assets/ No. of Employees* (RM)**
30,000.00	0.23	129,203.80	3.16	40,921.60
9,318.15	0.59	15,826.43	3.52	4,500.38
65,810.80	0.52	125,924.80	2.25	55,971.80
2,107.93	0.10	20,944.90	48.63	430.70
33,690.80	0.56	60,306.20	3.39	17,810.60
22,800.00	0.24	94,260.00	1.90	49,637.40
23,303.67	0.90	25,828.40	3.07	8,413.33
31,500.00	0.19	167,876.00	35.00	4,796.50
32,707.30	1.16	28,293.40	8.01	3,533.30
19,254.00	0.37	52,140.00	1.53	33,970.60
5,068.40	0.36	14,009.30	4.77	2,937.30
1,714.29	0.20	8,642.29	33.46	258.29
33,613.00	3.02	11,116.50	0.07	148,922.75
6,390.18	2.06	3,102.80	n.a	0.00

8.0 What Next?



	2010	2011	2012	2013	2014	2015	2016
ICT manufacturing	40,335	37,899	39,092	42,210	48,591	55,113	59,546
ICT trade	13,236	14,741	15,606	17,083	19,355	20,702	22,790
ICT services	39,938	42,832	46,662	50,989	54,909	60,351	65,958
Content and media	6,389	7,099	7,604	8,181	9,146	9,806	10,529
Other industries	5,847	5,532	4,835	4,271	5,251	6,083	6,114
ICT-GDP	105,745	108,103	113,799	122,734	137,252	152,054	164,937

Chart 1 Breakdown of the ICT-GDP by industries (2010-2016) - Source : PIKOM , ICT Strategic Review 2017/2018, 9th Edition

The unification of digital and physical economies is so rapid that in 2020 the Government is expecting Digital Economy to contribute 20% of the National GDP. The ICT industry continued to boom in 2016, posting RM164.9 billion in ICT-GDP, an increase of 8.5% over RM152.1 billion in 2015. ICT Services contributed the biggest share at 40%, at RM66 billion, followed by ICT manufacturing at 36.1% (PIKOM, 2017). More statistics on ICT Industries are available at Appendix 1.

The importance of ICT industries in expanding the Digital Economy is unquestionable thus the Government is putting the pieces in place to drive this sector. Through MDEC, 5 focus areas have been identified to be the catalysts that will kick start and sustain an ecosystem of digital economy: Big Data Analytics (BDA), the Internet of Things (IoT), E-Commerce, and Data Centre & Cloud, Cybersecurity.

MDEC has also programs that ensues the talent for Knowledge and Digital Workforce are sufficient to cater for future demand. Three core groups are targeted which are: Industries, Tertiary and Schools. The programs created are tailored for these talent groups: Primary and Secondary students, Undergraduates, Fresh Graduates And Working Professionals, Digital Maker And Premier Institute of Higher Learning.

Appendix 1 Economics Statistics For ICT Industry

Year	Contribution of ICT to the Economy (RM billion)	Share of ICT to the Economy (%)	ICT-GDP (billion)	Share of ICT to GDP	eCommerce of non-ICT industry	Share of eCommerce of non-ICT ICT industry to the Economy	GDP at Current Prices (RM Billion)	Share of eCommerce to GDP	eCommerce (RM billion)
2010	135.3	16.5	105,745	12.9	29,576	36%	821	4.6	37,729
2011	144.5	15.9	108,103	11.9	36,407	4.0%	911	4.9	44,605
2012	154.6	15.9	113,799	11.7	40,787	4.2%	971	5.1	49,760
2013	167.4	16.4	122,734	12.0	44,641	4.4%	1018	5.4	55,261
2014	188	17	137,252	12.4	50,723	4.6%	1106	5.8	63,636
2015	206.1	17.8	152,054	13.1	53,999	4.7%	1157	5.9	68,280
2016	224	18.2	164,937	13.4	59,049	4.8%	1230	6.1	74,603

Table 6 : Snapshot of the ICT Industry (2010-2016) – Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition

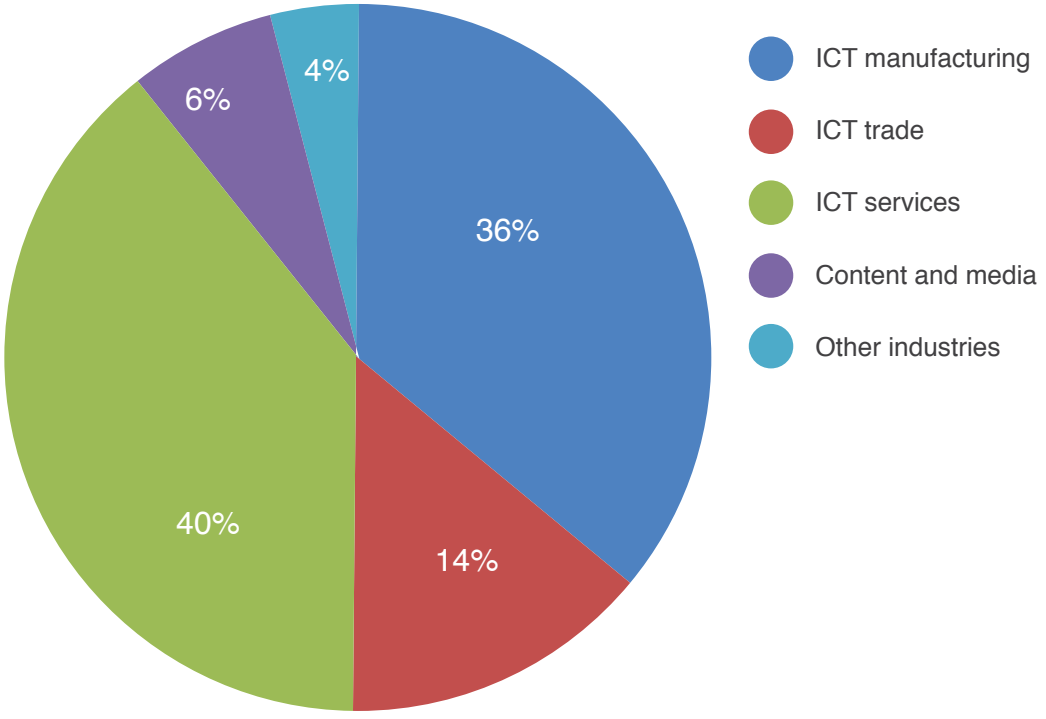
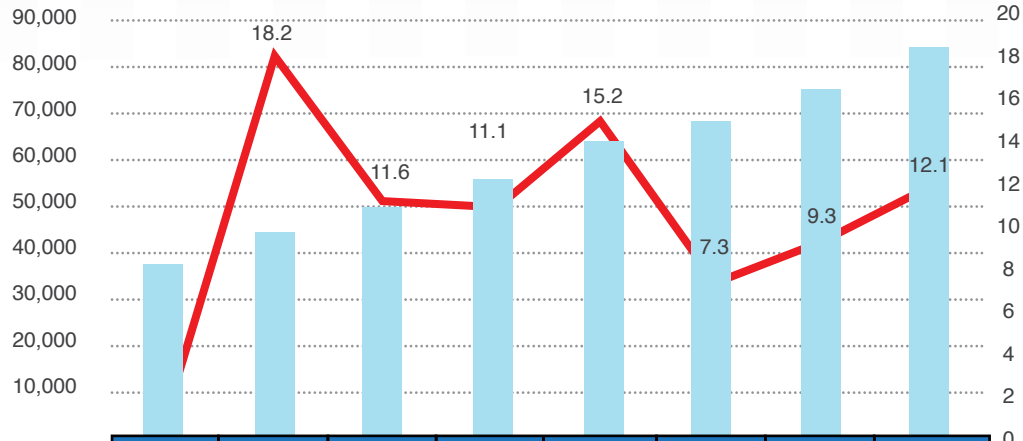


Chart 2 : Share by ICT-Producing Industries in 2016 - Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition



	2010	2011	2012	2013	2014	2015	2016	2017
eCommerce gross value added (million)	37,729	44,605	49,760	55,261	63,636	68,280	74,603	83,624
Year on Year Growth (%)	0	18.2	11.6	11.1	15.2	7.3	9.3	12.1

Chart 3 : eCommerce Gross Value Added - Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition

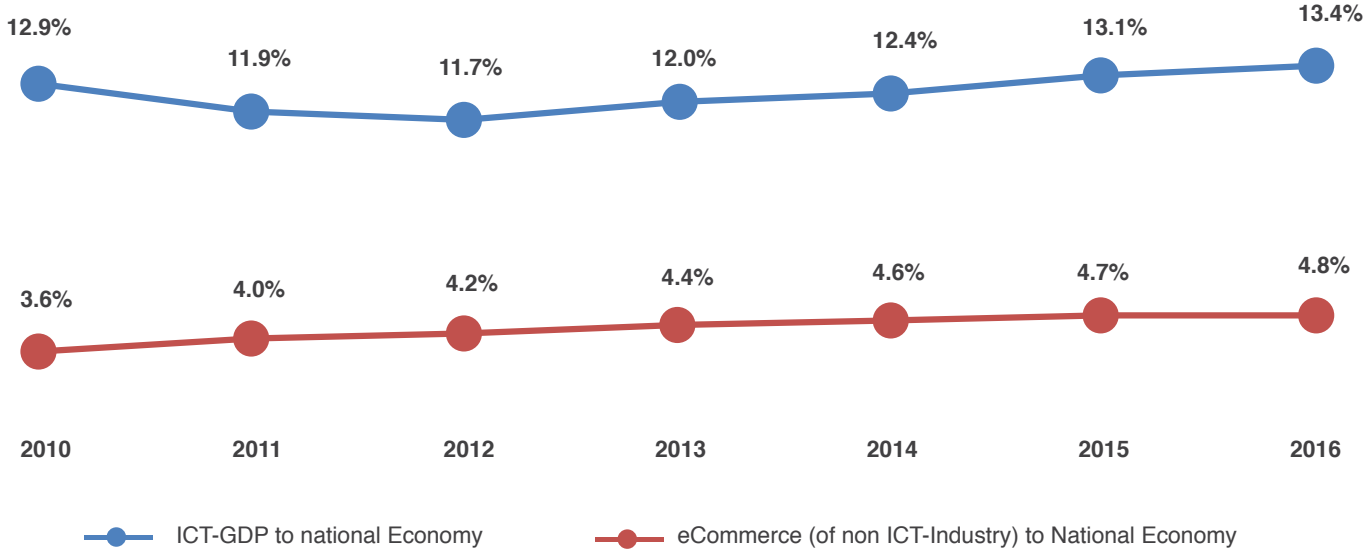


Chart 4 : eCommerce non-ICT Industry and ICT-GDP Grwoth Rates - Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition

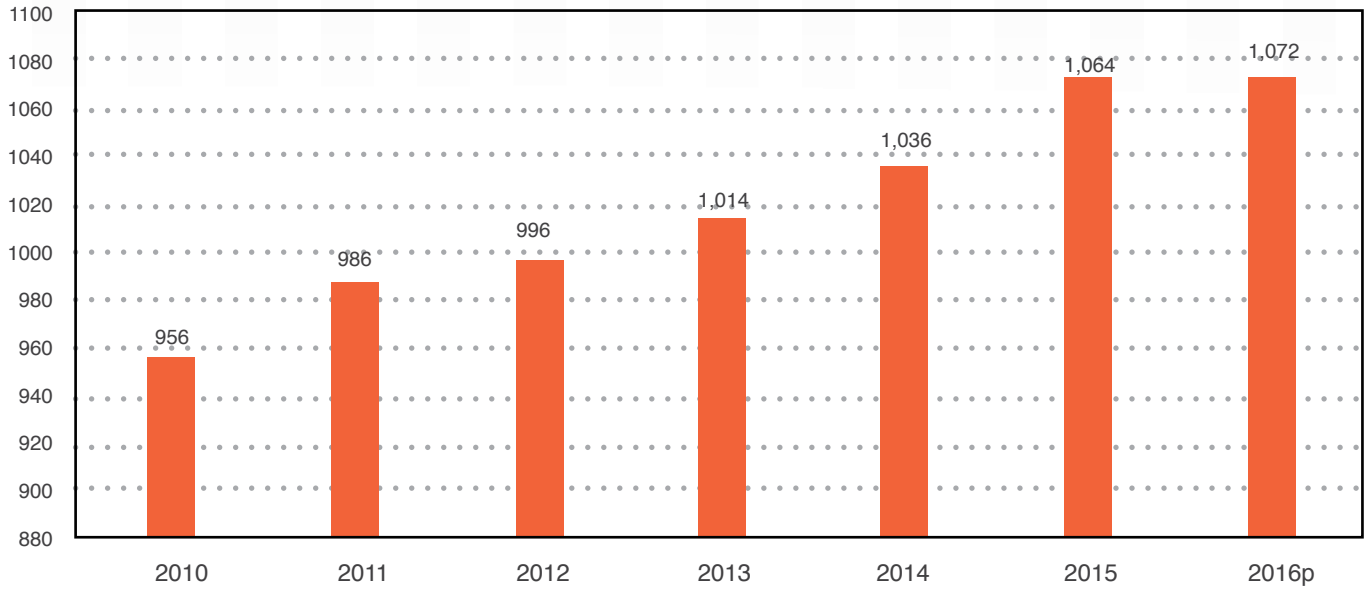
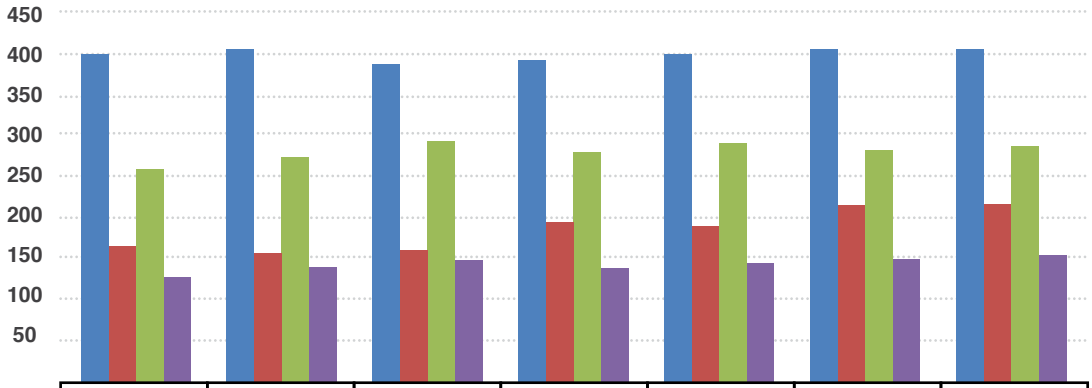


Chart 5 : Employment in the ICT Industry - Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition



	2010	2011	2012	2013	2014	2015	2016
ICT manufacturing	401	409	391	396	402	408	407
ICT trade	166	158	162	196	193	218	220
ICT services	261	277	294	282	293	286	290
Content and media	129	142	149	140	147	152	155

Chart 6 : Breakdown of Employment in the ICT Industry - Source: PIKOM, ICT Strategic Review 2017/2018, 9th Edition

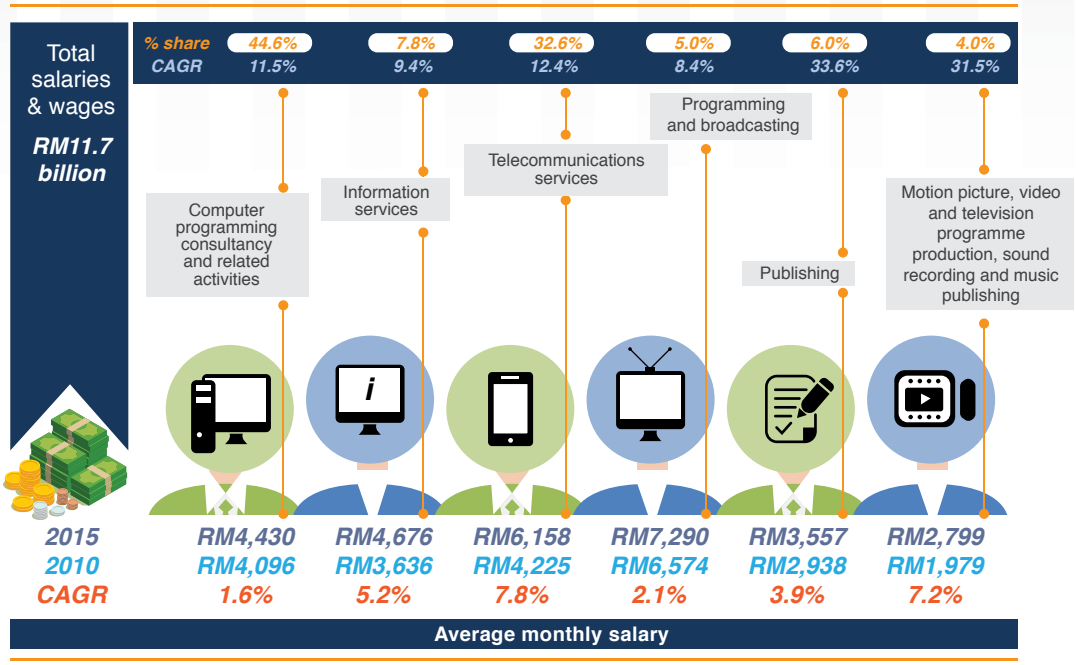


Figure 5 : Salaries & Wages and Average Monthly Salary for ICT Services by Activity, 2010 and 2015 - Source: Department of Statistics, Malaysia

APPENDIX 2 PRODUCTIVITY INDICATOR

Labour Competitiveness

Competitiveness in terms of labour cost indicates the comparability of the industry in producing products or services at the lowest possible labour cost.

RATIO	UNIT	WHAT IT TELLS
Labour Cost Per Employee (LCE) = Labour Cost / No. of Employees	Ringgit Malaysia (RM)	Measure the average remuneration per employee. A high ratio means high returns to the individual workers and vice versa
Unit Labour Cost (ULC) = Labour Cost / Total Output	Pure Number	Indicates the proportion of labour cost to total output. A high ratio indicates high labour costs. This could be due to a labour shortage and lack of skilled labour, or indicative of a poor labour mix. It could also be due to high labour turnover.

Labour Competitiveness

Labour productivity is one way of gauging the productivity performance of an industry.

RATIO	UNIT	WHAT IT TELLS
Total Output Per Employee = Total Output (Revenue) / No. of Employees	Ringgit Malaysia (RM)	The size of output generated by each employee of the enterprise.

Capital Productivity

Capital productivity indicates the degree of utilisation of fixed assets and how efficient these assets are being utilised

RATIO	UNIT	WHAT IT TELLS
Capital Turnover = Total Outputs (Revenue) / Fixed Assets	Pure Number	This ratio measures the efficiency in capital utilization and/ or marketing system. A high ratio indicates efficiency in capital utilization and good marketing system. A low ratio means low turnover of materials, high work-in progress and fixed assets.

Capital Intensity

Capital intensity measures the amount of fixed assets allocated to each employee. It is also known as Fixed Assets per Employee or simply capital-to-labour ratio. This ratio measures whether an industry is relatively capital-intensive or labour-intensive.

RATIO	UNIT	WHAT IT TELLS
Fixed Assets Per Employee = Fixed Assets/ No. of employees	Ringgit Malaysia (RM)	Indicates whether an enterprise adopts a capital intensive or labour-intensive policy. A high ratio indicates high capital intensity. A low ratio indicates that the enterprise is dependent on labour-intensive methods or that there is low technological input.

Glossary

Animation
The process of making films in which drawings or puppets appear to move.

Blueprint
A plan or set of proposals that shows how it is expected to work.

Broadcast
Is a programme, performance, or speech on the radio or on television.

Communication
The systems and processes that are used to communicate or broadcast information, especially by means of electricity or radio waves.

Computer
Is an electronic machine that can store and deal with large amounts of information.

Cybersecurity
The state of being safe from electronic crime and the measures taken to achieve this.

Desktop
Computers that are a convenient size for using on a desk or table, but are not designed to be portable.

eCommerce
The buying, selling, and ordering of goods and services using the Internet.

Ecosystem
A complex network or interconnected system

Fintech
Computer programs and other technology used to support or enable banking and financial services.

Laptop
A personal computer that is small and light enough to be operated on the user's lap

Mainframe
Mainframe computer is a large powerful computer which can be used by many people at the same time and which can do very large or complicated tasks.

Microelectronic
Is the branch of electronics that deals with miniature electronic circuits.

Multimedia
Computer programs and products which involve sound, pictures, and film, as well as text.

Network
A system of interconnected computer systems, terminals, and other equipment allowing information to be exchanged.

Outsourcing
The act of subcontracting (work) to another company

Platform
Such an operating system, software, etc. having a standard design for use with compatible programs, applications, etc.

Program
A set of instructions that a computer follows in order to perform a particular task.

Satellite
A man-made device orbiting around the earth, moon, or another planet transmitting to earth scientific information or used for communication.

Server
The central computer in a network to which other computers or terminals are connected: shared programs, files, and databases are stored on the server.

Software
The programs that can be used with a particular computer system.

Telecommunication
Communication by electronic or electric means, as through radio, telephone, telegraph, television, or computers.

Telemedicine
The treatment of disease or injury by consultation with a specialist in a distant place, especially by means of a computer or satellite link.

Website
Is a set of data and information about a particular subject which is available on the internet.

Acronyms

BDA - Big Data Analytics
DOSM - Department of Statistics Malaysia
EPF - Employees Provident Fund
EPU - Economic Planning Unit
GDP - Gross Domestic Product
GLC - Government-Linked Company
ICT - Information and Communications Technology
IoT - Internet of Things
IPTA - Institut Pendidikan Tinggi Awam
IPTS - Institut Pendidikan Tinggi Swasta
IT – Information Technology
LCE - Labour Cost Per Employee
MAC3 - Malaysian Animation Creative Content Centre
MAMPU - Malaysian Administrative Modernisation and Management Planning Unit
MARA - Majlis Amanah Rakyat
MATRADE - Malaysia External Trade Development Corporation
MDEC - Malaysia Digital Economy Corporation
MIMOS - Malaysian Institute of Microelectronic Systems
MOF - Ministry of Finance
MOSTI - Ministry of Science, Technology and Innovation
MPB - Malaysia Productivity Blueprint
MQA - Malaysian Qualifications Agency
MQR - Malaysian Qualifications Register
MTDC - Malaysian Technology Development Corporation
NITC - National Information Technology Council of Malaysia
PIKOM - Persatuan Industri Komputer dan Multimedia Malaysia
SIRIM - Standard and Industrial Research Institute of Malaysia
SME - Small and Medium Enterprises
SOCSO - Social Security Organisation
SSM - Suruhanjaya Syarikat Malaysia
TAM - Telecom Association of Malaysia
TPM - Technology Park Malaysia Corporation Sdn. Bhd
ULC - Unit Labour Cost

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